The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 98, NO. 5 CHICAGO, ILLINOIS JANUARY 30, 1932

STUDIES ON LEPROSY

EXPERIMENTAL LESIONS IN MONKEYS AND CULTIVATION OF BACILLUS LEPRAE *

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Leprosy, a chronic disease with characteristic lesions involving the skin and nerves, is one of the oldest diseases known to man. It is believed to have been prevalent in Egypt over 2,000 years before Christ, and its history may be traced through the Old Testament and down to the present time. The disease is widely distributed throughout the world and no nation is entirely free from it. It is estimated that there are from 1 to 4 million lepers in the world today, but the exact number is not known. It can be said, however, that leprosy constitutes a world-wide public health and social problem, and information of scientific character concerning this disease is therefore exceedingly important, for it seems paradoxical that in one of the oldest diseases recognized by man so little should be known regarding its etiologic agent, mechanism of infection, transmission, immunity and prevention.

For some time we have been interested in attempting certain experimental work in connection with leprosy in Porto Rico which would lead to a greater understanding of the infection. There have been many reports in the literature dealing with the experimental transmission of leprosy to animals and with the cultivation of organisms from human leprosy material. These reports, while they have not been accepted as proved fact, have lent a great deal of encouragement to investigators interested in this subject and it has always been the hope that eventually the problems in connection with the disease would be solved. In spite of the attention this disease has received, leprosy remains as one of the infectious diseases in which the postulates of Koch for the causative agent have not been acceptably fulfilled, although most authorities agree that Hansen's bacillus is the true cause of the disease and pathologists regard its presence in lesions of the disease as pathognomonic. We have endeavored to study the problem in three of its phases: (1) to attempt to transfer the disease to experimental animals (monkeys); (2) to cultivate the acid-fast organism (presumably Hansen's bacillus) present in human leprosy lesions, and (3) with cultures of this organism to reproduce experimentally the lesions in animals.

EXPERIMENTAL LESIONS IN MONKEYS, WITH HUMAN LEPROSY MATERIAL

A review of the literature [1] indicates that a considerable number of investigators have attempted to produce leprosy experimentally with human leprosy material. Monkeys, chimpanzees, rabbits, guinea-pigs, rats and mice have all been utilized for this purpose. No attempt will be made to review in detail all the literature bearing on this phase of the problem, but we will mention briefly some of the outstanding work and reported results. Nicolle has described experimental nodular lesions in two bonnet monkeys which were inoculated with human leprosy material. The nodules appeared in sixty-two days. Nicolle, Marchoux and Bourret obtained negative results with human leprosy material inoculated into chimpanzees. Kryle produced nodular lesions in three rhesus monkeys with human leprosy material, the nodules appearing in from eighteen to twenty-two days. Clegg injected monkeys with cultures, with negative results. Bradley has reported the production of nodular lesions in monkeys, which appeared within ten weeks following inoculation. Roffo, and also Duval and Duval and Couret, have reported experimental lesions in monkeys. More recently, Reenstierna,[2] Franchini [3] and Schöbl, Pineda and Miyao [4] have described experimental leprosy lesions in monkeys following the injection of human leprosy material. It appears then that many investigators have been able to induce lesions suggestive of leprosy in monkeys of different species, utilizing as a source of material the infected tissue from human cases of leprosy. Other animals have also been employed. Thus Clegg, as well as Kliten, has reported lesions in guinea-pigs, produced with cultures obtained from human beings with leprosy. Other investigators employing various cultures, thought to be cultures of B. leprae, have produced lesions in mice (Duval, Bayon), in rats (Marchoux, Shiga), and in rabbits (Kedrowski, Kliten). Damsch, Melcher, Ortmann, Vossius and Baranikow have reported lesions in rabbits, produced with human leprosy material, and recently de Souza Araujo has described lesions both in white mice and in monkeys with leprosy tissue from human patients.

It seems quite possible from the reports of the various investigators mentioned that lesions suggestive of leprosy may be produced in experimental animals, not only with leprosy material taken direct from leprosy

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* Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Rogers, Leonard; and Muir, Ernest: Leprosy, New York, William Wood & Co., 1925. de Souza Araujo, H. C.: Tr. Roy. Soc. Trop. Med. & Hyg. **24**: 577-612 (April) 1931.
2. Reenstierna, J.: Ann. de l'Inst. Pasteur **40**: 78 (Jan.) 1926.
3. Franchini, G.: Arch. ital. di sc. med. colon. **11**: 1-4 (Jan. 1) 1930.
4. Schöbl, Otto; Pineda, E. V., and Miyao, Isao: Philippine J. Sc. **41**: 233 (March) 1930.

patients but also with cultures of organisms which have been isolated from human leprosy material. Still there has been considerable skepticism in the minds of many that leprosy lesions have actually been reproduced in animals or that Hansen's bacillus has been cultivated on artificial mediums. There has been no clear-cut story of the infection of experimental animals, such as monkeys, with human leprosy material, and the isolation and cultivation of B. leprae, followed again by the experimental production of lesions in the experimental animal with such cultures. A review of the literature, however, seems quite convincing that suggestive leprosy lesions have been produced experimentally, at least in monkeys, with human material. Reported work with cultures in other animals is not so convincing and becomes less so when one considers the large number of different organisms which have been cultivated from human lesions of this disease and with which such experimental work has been performed.

EXPERIMENTAL PROCEDURE

In the leper colony of the Insular Department of Health of Porto Rico there are sixty patients with leprosy, both male and female, and it is estimated that there exist perhaps no more than forty other lepers on the island who are not under treatment. From the male patients at the leprosarium we selected a group of five showing marked nodular lesions. All experiments which we had carried on previous to those reported in this paper, which were designed to induce lesions of the disease in monkeys and other laboratory animals, had failed. Monkeys, rabbits and guinea-pigs have, in the past, been inoculated by us with emulsified leprosy nodules by several methods (intratesticularly, intraperitoneally, intramuscularly, intracerebrally, and through other routes) and, with one exception, the animals have remained in good health and have showed no evidences of the disease. One monkey became ill and died a year following intratesticular inoculation with leprosy material and on autopsy was found to have succumbed to generalized tuberculosis. The work of recent investigators, however, indicates that experimental lesions may be produced in monkeys following intradermal inoculation of leprosy material. We therefore decided to utilize the intradermal route of infection and by this method we have succeeded in producing granulomatous lesions very suggestive of leprosy, in both Macacus rhesus and Cebus olivaceus monkeys.

Fig. 1.—Typical nodule on Macacus rhesus following inoculation with human leprosy material. Nodule developed in eighteen days.

The lepers were brought to the University Hospital of the School of Tropical Medicine, and typical nodules from the arms and ears were removed under rigid aseptic technic by Dr. William R. Torgerson of the surgical staff. These nodules were dissected carefully from the underlying tissues and removed without skin. In the laboratory they were ground up finely with glass rods in sterile test glasses and emulsified in physiologic solution of sodium chloride. The various emulsions were examined by stained preparations for acid-fast organisms and were found to be rich in acid-fast bacilli, presumably B. leprae Hansen. Cultures were then prepared with the leprosy nodule emulsions on various mediums which will be described later. The emulsions were then pooled and eight Macacus rhesus and five Cebus olivaceus monkeys were inoculated intradermally over the eyebrow with 0.25 cc. of the material (table 1).

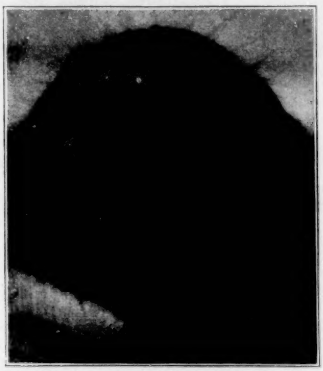

Fig. 2.—Same monkey as in figure 1, showing ulceration of nodule eleven days after appearance of nodule.

It will be noted in table 1 that in seven of the eight Macacus rhesus and in all five of the Cebus monkeys, nodular lesions developed at the site of inoculation in from eighteen to twenty days following injection of the leprosy material. These nodules were firm, hard and red, and did not show any tendency to soften. However, within a week following the appearance of the nodules, one of the nodules ulcerated and another was doubtful, because it was thought that the animal might have injured himself at the site of inoculation in moving about in the cage. From the latter, some serum was expressed from the lesion and acid-fast bacilli were demonstrated in the stained smear. The ulcerated nodule was removed for histologic study, as were several of the other most typical nodules. Parts of the nodules were emulsified, and cultures and stained smears were made with this material. The smears showed numerous acid-fast bacilli. The appearance of

TABLE 1.—*Inoculation of Monkeys with Human Leprosy Material* *

Monkey	Result
M-1	Nodule developed in 18 days
M-2	Negative
M-3	Nodule developed in 19 days
M-4	Nodule developed in 18 days
M-5	Nodule developed in 18 days
M-6	Nodule developed in 20 days
M-7	Nodule developed in 18 days
M-8	Nodule developed in 18 days
C-1	Nodule developed in 19 days
C-2	Nodule developed in 20 days
C-3	Nodule developed in 20 days
C-4	Nodule developed in 19 days
C-5	Nodule developed in 18 days

* In this group each animal was inoculated intradermally with 0.25 cc. of human leprosy nodule emulsion.

such lesions in monkeys following the inoculation with leprosy material from human beings is in accordance with the work reported by several other investigators who have reported incubation periods ranging from eighteen to seventy days. The shortest incubation period in monkeys which corresponds with the experiments described in this paper has been reported by Kryle, while the longest periods are those reported by Nicolle (sixty-two days) and by Bradley who reports an incubation period of ten weeks.

Histologic examination by Dr. William C. von Glahn of sections of three of the most typical nodules revealed definite granulomas consisting of nodular accumulations of cells of the large mononuclear type with infiltrations of lymphocytes and clumps of polymorphonuclears. The characteristic foamy cellular cytoplasm was not present in these early lesions and the first acid-fast stains of these sections revealed no bacilli, although subsequent study of these sections with a modified technic showed the acid-fast organisms and acid-fast granules to be present. Multinucleated giant cells were found in some of the sections. The lesions were distinctly early and the histologic pictures presented are suggestive of early lesions of leprosy which, we believe, they may be. However, such lesions in monkeys, in our experience, vary greatly in size, ranging from 0.5 to 2 cm. in diameter, and increasing gradually during the first ten days or two weeks following their appearance. They then tend to regress, and they disappear entirely within another three or four weeks. Schöbl, Pineda and Miyao reported the production of nodular lesions in the Philippine monkey by repeated intradermal inoculation of human leprosy material and they believe that there is an allergic factor involved in the production of such lesions. Our experiments would not indicate this, since, in the majority of monkeys of the two species we have used, nodular lesions are produced following a single injection of the leprosy material. This also coincides with the experiments reported by Reenstierna, who has described experimental lesions in monkeys practically identical with our own.

In view of the several reports of other investigators concerning the experimental production of granulomatous lesions in monkeys with human leprosy material and the positive results we have obtained in our experiments, it seems most likely that in these lesions we have definite evidence of experimental transmission of the infection to this experimental animal. The monkey, however, apparently possesses considerable natural immunity to this infection, for such experimental lesions are not progressive and usually the infection is aborted within a few weeks following the appearance of nodular lesions. Control animals have been inoculated with mediums and various other substances, such as wax and ground guinea-pig lymph gland, and no lesions have apparently resulted from such inoculations.

CULTIVATION OF B. LEPRAE

Leprosy has been the subject of extensive bacteriologic investigation during the six decades that have elapsed since the observations of Hansen. The bacilli noted by this worker to be constantly present in the cells of freshly excised lepromas are universally believed to be the specific cause of this malady. Notwithstanding the exhaustive attempts to cultivate B. leprae and the periodic reports of success, it appears to be still true that the organism has not been artificially cultivated in vitro. An understanding of the disease would be greatly aided by the cultivation of the leprosy bacillus, and a pure antigen would materially assist in the related serologic studies of susceptibility and the production of immunity.

A review of the literature [5] shows that a variety of organisms have been yielded on culture of leprosy material.

Only a few [6] of the many investigators have considered the gaseous environment when attempting to obtain cultures of the leprosy bacillus artificially, and yet it is reasonable to believe from the recent literature [7] on the gaseous metabolism of bacteria that consideration of the respiratory requirements may play a very important rôle in obtaining primary isolations. With this consideration in mind, the experiments to be described were undertaken.

MATERIALS AND METHODS

Ten mediums, recognized as having merit for the cultivation of acid-fast organisms and used at various times in attempts to isolate B. leprae, were prepared as follows and placed in 18 by 150 mm. culture tubes. Witte's prewar peptone, 1 per cent, and Kahlbaum's sodium chloride, 0.5 per cent, were incorporated in all the broth mediums.

Fig. 3.—Section of ulcerated nodule showing granulomatous lesion.

Glycerol Potato and Glycerol Broth Potato.—Potatoes from a number of different sources were selected and the regular slants made. A few drops of glycerol (K) were poured over the potato surface in the preparation of the former medium, and 2 cc. of 5 per cent glycerol broth were added to the slants in the latter medium, previous to sterilization.

Petroff's Egg and Dorsett's Egg Mediums.—The two mediums were prepared according to the standard methods.

Hormone Glycerol Agar.—The broth was prepared by the infusion of fresh beef; decantation was resorted to rather than filtration at all stages in the process, and glass vessels were used throughout, 1.5 per cent agar and 5 per cent glycerol were added previous to sterilization.

5. Duval, C. W., and Wellman, C.: J. Infect. Dis. **11**: 116, 1912. Wolbach, S. R., and Honeij, J. A.: J. M. Research **29**: 367, 1914. Honeij, J. A.: J. Infect. Dis. **17**: 376, 1915. Kedrowski, W. J.: J. Trop. Med. & Hyg. **31**: 17, 1918. Walker, E. L.: J. Prev. Med. **3**: 167 (May) 1929. Muir, E.: A System of Bacteriology, London **5**: 345, 1930.

6. Wherry, W. B.: J. Infect. Dis. **46**: 263 (March) 1930.

7. Soule, M. H., in Jordan, E. O., and Falk, I. S.: The Newer Knowledge of Bacteriology and Immunology, Chicago, University of Chicago Press, 1928.

Ordinary Glycerol Agar.—This was the usual 5 per cent glycerol, 2 per cent agar medium.

Rabbit Blood Agar and Rabbit Serum Agar.—Equal volumes of the melted hormone glycerol agar at 50 C. and sterile rabbit's blood or rabbit's blood serum were mixed and cooled in the slanting position.

Dextrose Brain Broth.—The usual medium of Rosenow.

Koori Konnyaku.—Strips of this carbohydrate were moistened with hormone broth. The physical state of this substance was not altered by subsequent sterilization.

EXPERIMENTAL PROCEDURE

Patients with nodular leprosy were available. Well isolated nodules located on the arms and ears were selected, and the skin over the areas was thoroughly washed with soap and water previous to several applications of tincture of iodine. A local anesthetic was administered, and four nodules from three different patients were enucleated with aseptic technic. The tissue was emulsified with physiologic solution of sodium chloride and filtered through sterile glass wool. On microscopic examination of the filtrate for the presence of acid-fast organisms, the emulsions were found rich in these forms; two drops were transferred to each tube of medium with sterile bulb pipets. Subsequently, the cotton plugs were flamed and pushed within the tubes.

When cool, the inoculated tubes were divided into four series and placed in Novy jars of 2,400 cc. capacity so that at least two inoculated tubes of each of the ten mediums, of each of the nodular series, were exposed to the various environments. The jars were closed as usual, attached to a vacuometer, and the desired gaseous atmospheres were introduced by the procedure of Novy, Roehm and Soule.[8]

In this manner, freshly inoculated tubes were placed in atmospheres containing 10 per cent oxygen and 10 per cent carbon dioxide; 20 per cent oxygen and 10 per cent carbon dioxide; 40 per cent oxygen and 10 per cent carbon dioxide; 0.0 per cent oxygen and 10 per cent carbon dioxide, plus air controls. The early observations of Wherry and Ervin [9] that carbon dioxide is essential to the growth of the tubercle bacillus, and the recent work of Novy and Soule,[10] wherein it is emphasized that a definite concentration of free carbon dioxide is absolutely necessary to maintain the physicochemical equilibrium between the extracellular and the intracellular carbon dioxide, directed the use of free carbon dioxide in these attempted isolation experiments of the leprosy bacillus. From previous work with bacteria and protozoa, a concentration of 10 per cent carbon dioxide seemed to be the most favorable for the primary isolation of organisms; therefore this tension was introduced in all the jars in the present series of experiments, and the oxygen concentration was varied.

To obtain the desired tensions of the different gases, the jars were attached to the vacuometer and after exhaustion to the desired negative pressures the calculated number of millimeters of the gases were run in. No buret analyses were made, but previous experience with this method for producing gaseous mixtures of definite composition indicated that the tensions desired were obtained with a variation of less than 0.5 per cent.

After the adjustment of the gaseous tensions, the jars were placed in incubators at 37.5 C. The ordinary air controls subsequent to the flaming of the tubes were sealed with wax, and a tiny hole was put through the wax with a hot wire to insure an interchange of air, as suggested by Novy and Soule [11] in their studies on the respiration of the tubercle bacillus. These tubes were then incubated at 37.5 C. in close proximity to the jars.

TABLE 2.—*Growth on Mediums Used for Isolation of B. Leprae in Various Concentrations of Oxygen and Carbon Dioxide in Novy Jars Incubated at 37 C. for Six Weeks* *

	Percentage of CO_2 and O_2																			
	O_2 10.0—CO_2 10.0				O_2 20.96—CO_2 10.0				O_2 40.0—CO_2 10.0				O_2 0.0—CO_2 10.0				Air Controls			
Patient	1	1A	2	3	1	1A	2	3	1	1A	2	3	1	1A	2	3	1	1A	2	3
Mediums:																				
Glycerol potato	?	?	0	0	+	?	0	+	+	+	0	+	0	0	0	0	0	0	0	0
Glycerol broth potato	?	0	+	0	+	?	?	0	+	+	0	?	0	0	0	0	0	0	0	0
Petroff's egg	?	+	+	0	+	+	?	+	+	+	+	+	0	0	0	0	0	0	0	0
Dorset's egg	0	0	0	0	0	0	0	0	+	+	?	0	0	0	0	0	0	0	0	0
Hormone glycerol agar	+	?	0	+	+	+	?	+	+	+	+	?	0	0	0	0	0	0	0	0
Ordinary glycerol agar	0	0	cont.	0	0	cont.	cont.	0	0	cont.	0	cont.	0	0	0	0	0	0	0	0
Rabbit blood agar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabbit serum agar	0	?	0	0	?	0	0	+	0	0	0	0	0	0	0	0	0	0	0	0
Dextrose brain broth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Koori Konnyaku	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* Those tubes showing positive growth of acid-fast rods were subcultured to same mediums and returned to previous gaseous environments; + indicates tiny colonies with well formed rods; ? indicates well formed rods with question of colonies; 0 indicates highly granular degenerating rods.

The air controls were carefully observed for evidence of growth and contamination. The jars were regularly removed from the incubators and inspected, but they were not opened during these routine examinations. At the end of four weeks of incubation the jars were opened, and several contaminated tubes containing a spore-forming aerobe were discarded. There was no macroscopic evidence of growth in the uncontaminated tubes. Several were therefore selected, and smears were prepared from material obtained from the surface of the medium and stained by the Ziehl-Neelsen method. Microscopic examination indicated proliferation in several tubes; therefore the tubes were returned to the jars, the jars closed and the original gaseous mixtures introduced and incubation continued. At the end of six weeks of incubation the jars were opened and all tubes were carefully examined microscopically and macroscopically. The data are presented in table 2.

The tubes were taken from the jars and the surfaces of the mediums were carefully examined by transmitted and reflected light for colonies. When present, the colonies were small, averaging about 1 mm. in diameter, and heaped up, with a distinct mucoid appearance and

8. Novy, F. G., Jr.; Roehm, H. R., and Soule, M. H.: J. Infect. Dis. **36**: 109 (Feb.) 1925.
9. Wherry, W. B., and Ervin, D. M.: J. Infect. Dis. **22**: 194 (March) 1918.
10. Novy, F. G., Jr., and Soule, M. H.: To be published.
11. Novy, F. G., Jr., and Soule, M. H.: J. Infect. Dis. **36**: 168 (Feb.) 1925.

a loose filamentous border. Whether or not colonies were present, at least two smears were made from material taken from the surface of the medium and from the water of condensation in each tube. The preparations were air dried, gently fixed and stained with carbolfuchsin, decolorized with 10 per cent sulphuric acid and counterstained with Loeffler's methylene blue (methylthionine chloride U. S. P.). Tubes which showed the presence of colonies and well formed, solid-staining rods were designated as plus; there was a total of forty-six tubes in this group. Frequently, in the absence of colonies, the smears contained well formed solid-staining rods suggestive of proliferation or at least of a favorable reaction to the new environment; such tubes were noted as containing a questionable growth. When the preparations contained only granular acid-fast bodies or highly granular rods, zero growth was recorded. No bacillus, coccus or actinomyces types were observed in any of these tubes or in the subsequent cultures, excepting the aerobic spore-forming contamination noted in the ordinary glycerol medium.

A comparison of the data presented in table 2 should be made. It will be noted that no medium or gaseous environment gave uniformly positive results. However, there seemed to be a distinct advantage in the use of the glycerol potato, the egg-containing and the hormone glycerol agar mediums. The most favorable gas environment seemed to be 40 per cent oxygen and 10 per cent carbon dioxide, although in the presence of 10 per cent and 20 per cent oxygen plus 10 per cent carbon dioxide there were many positive results. It was rather to be expected from the experiments of Wherry that the low oxygen and 10 per cent carbon dioxide environment would give the best results, but such was not the case. The observed fact that 40 per cent oxygen and 10 per cent carbon dioxide was the most favorable environment is in accord with previous work on the tubercle bacillus, wherein it was found that this increased tension of oxygen was the most favorable for the growth of this germ.

A striking fact is that no growth took place in any of the air controls or in the tubes incubated under anaerobic conditions plus carbon dioxide. The air controls should be compared with the tubes incubated in air plus 10 per cent carbon dioxide, which mixture seemed to be second best for the isolations. Thus, one is to infer that the presence of free carbon dioxide is beneficial for the obtaining of primary isolations. From the absence of growth in the oxygen-free jars (and it might be mentioned at this point that the granulation of the cells was most conspicuous in those tubes in the anaerobic jars), it may be inferred that the leprosy bacillus is a strict aerobe. It is possible, and, indeed, later experiments have demonstrated, that the germ can utilize free oxygen at concentrations as low as 1 per cent, if carbon dioxide is present and, of course, provided a sufficient amount of oxygen is available at this low tension.

The growth from sixteen of the tubes marked plus was taken up in physiologic solution of sodium chloride, and this suspension, rich in acid-fast organisms, was used for the inoculation of the monkeys.

Fresh potato, egg and hormone glycerol agar mediums were prepared, and the growth from the remaining thirty positive tubes was transferred with a platinum wire to the freshly prepared mediums; the growth on each medium was transferred to a like tube of medium. After the cotton plugs were flamed and cooled, the tubes were returned to the jars and the gaseous mixtures which had favored the initial growths were introduced. The jars were then placed in the incubator at 37.5 C. for four weeks. At the end of the incubation period the jars were opened and the tubes were examined macroscopically and microscopically for growth as before. Only eleven tubes in this second generation gave the typical colonies observed in the primary isolations and again the 40 per cent oxygen and 10 per cent carbon dioxide mixture seemed to be the most favorable atmosphere; the positive cultures were about equally distributed among the three varieties of mediums.

The growth was removed from the eleven positive tubes and placed on the surface of freshly prepared tubes of medium and returned to the jars with their former gaseous mixture, and incubation was again carried out for four weeks. It was noted on the examination of these tubes at the end of the incubation period that colonies were present in ten of the tubes,

Fig. 4.—Typical nodule in skin of Macacus rhesus monkey, produced with culture of acid-fast organisms from human leprosy material.

but these so-called third generation colonies were no larger than the colonies obtained in the primary isolations; in other words, the germs were not rapidly adapting themselves to a saprophytic existence.

Subcultures were made from the ten tubes to like mediums and the freshly inoculated tubes were returned to the same gaseous environments, incubated as usual and examined at the end of four weeks. When the jars were opened, only five of the tubes showed the typical colonies. These positive tubes were subcultured to about twenty tubes of each of the three favorable mediums, and the freshly inoculated tubes were placed in the jars and 40 per cent oxygen and 10 per cent carbon dioxide were introduced, and incubation was carried out as before. This is the status of the cultivation experiments to date.

A recapitulation of these experiments shows that there were forty-six positive cultures in the first generation, eleven in the second, ten in the third and five in the fourth. These data are suggestive of a gradual loss in the power of adaptation of this acid-fast organism to growth on artificial mediums.

We believe that these experiments confirm the recent work of Shiga [12] and also of Wherry on the isolation of an acid-fast organism from human leprosy, with perhaps much more satisfactory cultural data.

EXPERIMENTAL LESIONS IN MONKEYS WITH CULTURES OF B. LEPRAE

With definite proliferation of acid-fast bacilli in cultures prepared with the leprosy nodule emulsions it remained to determine whether nodular lesions could be produced experimentally in monkeys with the artificial cultures of the organisms. Ten Macacus rhesus and seven Cebus olivaceus monkeys were inoculated intradermally over the eyebrow with 0.5 cc. of a pooled suspension of acid-fast bacilli taken from several cultures. Guinea-pigs were also inoculated intraperitoneally with 1 cc. of this suspension to rule out Bacillus tuberculosis. Results of inoculations with cultures of acid-fast bacilli from leprosy nodules grown on artificial mediums are found in table 3.

Fig. 5.—Section of nodule removed from previous monkey, showing granulomatous lesion and beginning foam cell formation.

TABLE 3.—*Inoculation of Monkeys with Cultures of B. Leprae* *

Monkey	Result
M-1	Small nodule (21 days)
M-2	Negative
M-3	Negative
M-4	Small nodule (7 days); much larger (14 days) Excised
M-5	Negative
M-6	Small nodule (7 days)
M-7	Negative
M-8	Negative
M-9	Small nodule (7 days); much larger (14 days) Excised
M-10	Small nodule (7 days); much larger (14 days) Excised
C-1	Small nodule (7 days)
C-2	Small nodule (7 days); much larger (14 days)
C-3	Small nodule (14 days)
C-4	Negative
C-5	Small nodule (7 days); much larger (14 days) Excised
C-6	Small nodule (7 days)
C-7	Negative

* In this group each animal was inoculated intradermally with 0.5 cc. of culture suspension of B. leprae.

In five of the Macacus rhesus and five of the Cebus olivaceus monkeys which were inoculated intradermally with cultures of acid-fast bacilli, nodules developed in from one to two weeks following inoculation, varying in size from that of a small pea to 1 cm. in diameter. The nodular lesions were firm, hard and somewhat reddish, and tended to regress rapidly after the third or fourth week. There was no evidence of secondary infection or suppuration. From Cebus 1, smears were prepared from the nodule over which the skin was broken by injury in handling the animal and these smears showed numerous acid-fast bacilli with some mononuclear and polymorphonuclear cells. Sections of the nodules excised for histologic study showed definite granulomatous changes.

One of these nodules, which was seen by Dr. Von Glahn, showed a marked cellular infiltration consisting of large mononuclears, polymorphonuclear cells and lymphocytes; marked edema and an occasional multinucleated giant cell were noted. The central cytoplasm of some of the giant cells was stippled but not definitely foamy in character. Acid-fast organisms could not be demonstrated in these sections. In other sections of nodules produced by inoculating cultures, we have seen occasional acid-fast bacilli but they have been remarkable for their scarcity, though some of the sections removed on the thirty-first day have shown cells which were definitely becoming slightly foamy in character. These lesions, however, as the lesions produced experimentally in monkeys with direct inoculation of leprosy material from lepers, described in the beginning of this report, are very early lesions. Our experience with such lesions, however, is limited and no studies are available in the literature on the histology of such early lesions. We feel, therefore, that both types of lesions should be classified as granulomas which are very suggestive of early lesions in leprosy.

COMMENT

The reports of other investigators on the experimental production of nodular lesions of the granulomatous type in monkeys following inoculation with human leprosy material seems to be well founded. Our experiments would indicate that one may with a great deal of regularity infect certain monkeys with such material by intradermal inoculation and produce lesions within three weeks at the site of injection which are suggestive of lesions of early leprosy. Acid-fast bacilli are to be found in such lesions as other workers have observed. The entire question of the cultivation of B. leprae should be studied further, with utilization of recent methods which have been advocated. Our experiments have led, we believe, to the unquestionable cultivation of B. leprae on artificial mediums. Experimental lesions have been reported by several investigators in such animals as guinea-pigs, rats, the Japanese dancing mouse, and other mice. None of these lesions have been definite enough to permit their acceptance as evidence of experimental leprosy in these animals. Clegg was unable to infect monkeys with his cultures, although guinea-pigs were found to be susceptible. The lesions which we have produced in two

Fig. 6.—Ulcerated nodular lesion in skin of Macacus rhesus monkey produced with cultures of acid-fast bacilli from human leprosy material.

12. Shiga, K.: Japan M. World **9**: 213 (July) 1929.

species of monkeys are very similar, if not identical, to those which other observers have been able to induce in these animals with leprosy material direct from human subjects. But in addition we have also produced similar lesions in experimental monkeys with cultures of the organism.

SUMMARY

The experiments described include (1) the experimental production of granulomatous lesions suggestive of early lesions of leprosy in two species of monkeys by intradermal inoculation of human leprosy material; (2) the cultivation of acid-fast (presumably B. leprae) bacilli from human leprosy nodules on several artificial mediums in various gaseous environments, and (3) the experimental production of granulomatous lesions, suggestive of early leprosy, in two species of monkeys by the intradermal inoculation of cultures of acid-fast bacilli from human leprosy material grown on artificial mediums. We believe that the experiments indicate a step forward in the fulfilment of Koch's postulates for the causative agent in the disease of leprosy.

FRACTURES OF THE UPPER END OF THE HUMERUS

AN END-RESULT STUDY WHICH SHOWS THE ADVANTAGE OF EARLY ACTIVE MOTION *

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Fracture of the upper end of the humerus is a common injury and accounts for about 2.2 per cent of all bony injuries.[1] It includes definite clinical types, and, when properly treated, good results can be obtained in the great majority of cases. It is my purpose in this article to present an analysis of ninety-six cases of injuries to the upper end of the humerus (table 1), to discuss their treatment, and to show the advantage in certain cases of a simple form of fixation and the importance of early active motion. These cases include only those fractures at or above the level of the surgical neck of the humerus. Fractures occurring at or below the insertion of the internal rotators of the arm present special problems and are essentially shaft fractures.

The data which are used here were gathered from the records of the fracture service at the Massachusetts General Hospital over the past seven years, with one group of cases from the three years preceding that. These records show a definite trend of treatment away from apparatus and prolonged immobilization toward the simpler forms of fixation and early active motion. The patients were treated by three different services, two surgical and an orthopedic, and by a considerable number of different surgeons. Individual methods of treatment may have varied in some details, but the members of the fracture service are agreed on the main principles of procedure.

The results have been tabulated in the manner that has been employed for some years at the Massachusetts General Hospital.[2] The results are grouped under the three headings of anatomic, economic and functional, and are rated from 0 to 4, 4 being perfect or almost so; 3 is around 75 per cent, 2 around 50 per cent, and 1 about 25 per cent of the desired result; 0 signifies virtual failure. Therefore a case rated A_4, E_4, F_4, would mean a wholly satisfactory result, fully restored anatomic relationships, ability to return to former work, and normal range of motion in the shoulder joint. The rating of a case is discussed by all the members of the fracture service at the weekly follow-up clinics and is not left wholly to the man who took care of the case, and, while there is malice toward none, there is not always charity toward all.

The customary grouping of fractures of the upper end of the humerus is based on the anatomic region involved. Some cases fit very easily into such a classification, as, for example, fractures of the greater tuberosity, epiphyseal separations, or fracture dislocations. Others, however, are difficult to assign to a particular group. In some cases it is hard to say whether a fracture is through the surgical neck of the humerus or through the anatomic neck. Out of ninety-six cases reviewed, seventy-six were classified as either surgical or anatomic neck injuries. Out of these seventy-six only four were diagnosed as fractures of the anatomic neck. This is about 6 per cent, which is a little below what others have found.[3] There were a few cases that were called fractures of both the surgical and the anatomic neck. Doubtless many who reviewed our series of roentgenograms would shift some of the cases from one group to another. Many of these fractures are comminuted in type, and even with the best of roentgenograms it is a matter of personal opinion just where the fracture lines run and which are the primary ones. Consequently, I have considered fractures of the neck of the humerus as belonging to two groups, depending not on the anatomic location but on their type. In the first group are those transverse fractures, usually with displacement, but sometimes without, occurring more often in young people than in old, and which I think orthopedists would all agree are true fractures of the surgical neck. In the second group are those comminuted fractures, sometimes called impacted (although I do not believe that the impaction is a marked feature), which may be frankly through the surgical or anatomic neck, but which are most often impossible of precise location (fig. 1). The advantage of this grouping is that the treatment of the two types falls into two distinct classes. This makes the evaluation of results simple. It furthermore aids one in determining the best way in which to treat the fracture, which is, after all, the chief concern of both surgeon and patient. I hope later to show that the present-day treatment of these fractures is an improvement over that of a decade ago.

TABLE 1.—*Distribution of the Different Types of Fractures of the Upper End of the Humerus Since 1923*

Type of Fracture		No. of Cases
Transverse fractures of the surgical neck		36
Comminuted fractures		50
Greater tuberosity alone		4
Fracture dislocations		13
With fracture of the greater tuberosity	8	
With fracture of the head and neck	5	
Separation of the upper humeral epiphysis		3
Total		96

* Read before the Section on Orthopedic Surgery at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Keen, W. W.: Surgery, Philadelphia, W. B. Saunders Company, 1907. Eliason, E. L.: Fractures of Humerus, Radius and Ulna, New York, D. Appleton & Co., 1923.

2. Complete Record of a Case of Fracture as Recorded by the Fracture Service of the Massachusetts General Hospital: Methods and Problems of Medical Education, series 14, New York, Rockefeller Foundation, 1929.

3. Eliason (footnote 1). Santee, H. E.: Ann. Surg. **80**: 103 (July) 1924.

The anatomy of this region is important but not complex. The shoulder joint is known to be structurally a weak joint. The head of the humerus is large compared to the glenoid cavity. This cavity is, moreover, shallow. The joint capsule is thin and lax. All these factors make possible an extremely great range of motion but at the expense of stability. What strength the joint possesses depends on the surrounding muscles. The deltoid muscle lies over the shoulder joint and protects it but is not important as a stabilizing factor. The pectoralis major, latissimus dorsi, and teres major

Fig. 1.—Comminuted fracture of upper end of humerus: This type of fracture is an entity in itself and calls for a definite mode of treatment. Attempts to classify it as of the surgical neck, anatomic neck or greater tuberosity are confusing. These fractures are comminuted but not impacted.

insert distally to the tuberosities and are important factors in producing fracture deformities. An inner group of four muscles is attached to the tuberosities, the supraspinatus, infraspinatus, teres minor and subscapularis. Between these two groups of muscles lies the surgical neck, a region without muscle attachments and a point where the structure of the bone is changing from cancellous to cortical; a region, therefore, that is especially prone to give way under stress and strain. The actions of the muscles are evident when one considers the typical form of displacement that one sees in a transverse fracture through the surgical neck. The lower fragment is adducted by the pull of the pectoralis major, the latissimus dorsi and the teres major. Internal rotation due to these muscles seldom plays a part in the deformity. The upper fragment is abducted by the supraspinatus. There is usually not much rotation of this fragment because the subscapularis, which is an internal rotator, is practically balanced by the external rotating power of the infraspinatus and teres minor and some of the supraspinatus. All the cases in this series except three showed the typical type of deformity. In these three cases the mechanism of injury could not be definitely ascertained, but the atypical position of the bones was undoubtedly due to the nature of direct violence. The patients almost always say that they fell directly on the shoulder. Direct violence probably accounts for a majority of these fractures, but a review of a series of cases such as these gives the impression that many injuries attributed to direct violence actually occurred indirectly from a fall on the elbow or hand, with the arm abducted, and that the fall on the shoulder followed the fracture.

There were twelve cases of fracture of the greater tuberosity in this series, or approximately 12 per cent. Of these, eight were associated with a dislocation and will be considered under fracture-dislocations. The remaining four were uncomplicated by any other injury. Two of these patients were women and two were men, the average age being 45 years. The chief points in diagnosis were tenderness over the greater tuberosity and marked pain on attempt to abduct or externally rotate the arm. The fracture was probably due to direct violence, judging from the stories these patients told, although it is perfectly possible to produce this injury by muscle pull alone. In cases in which the greater tuberosity is completely pulled loose, operative replacement of the fragment may have to be performed. One of our cases was treated by a body swathe and sling, and active motion was begun on the fourth day. This case showed a very slight fracture with no tendency toward displacement. The other cases, in none of which was the fragment grossly displaced, were put up either abducted in skin traction in a Thomas arm splint or in an airplane splint. In this way the muscles inserting into the greater tuberosity are put in positions of relaxation. Theoretically, external rotation as well as abduction should be secured, but abduction alone in these cases was sufficient, and all got a perfect anatomic, functional and economic result. The average length of fixation was two weeks, after which time the arm was brought down to the side and supported in a sling. This is shorter than the time of fixation usually advocated for this type of fracture, but it seems to me that if early supported active motions are performed carefully and under supervision, it is unnecessary to keep these cases without gross separation fixed as long as the conventional four or five weeks.

There were no cases of fractures of the lesser tuberosity recognized as such in this series of cases. This is an uncommon fracture. A few cases have been reported and their treatment discussed. I mention the occurrence of the fracture for the sake of completeness but do not discuss it.

Fracture dislocations will be taken up next because the greater tuberosity, which has just been considered, is so frequently one of the factors in this combination of injuries. Out of thirteen cases of fracture dislocations, eight of the dislocations were associated with fracture of the greater tuberosity. Five of these

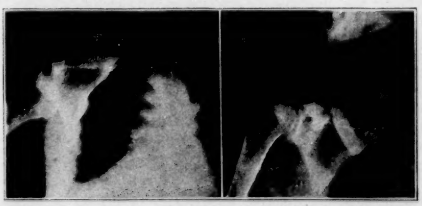

Fig. 2.—Forward dislocation of humerus with fracture of the greater tuberosity. Notice how the tuberosity has returned to its normal position after the dislocation has been reduced. The dislocation is the important feature of this combination of injuries.

patients were men and three women, the average age being 53 years. When this situation (dislocation with fracture of greater tuberosity) exists, the dislocation is the major problem. In all these cases the dislocation was of the anterior type, which is usually the case. The first thing to do, therefore, when confronted with this double injury is to reduce the dislocation. When this has been done, one finds that there is nothing more to do, for the fractured greater tuberosity will have returned to its proper position (fig. 2). This was found true in all the cases of this series. Nevertheless,

one of the surgeons was not satisfied with the post-reduction series of roentgenograms and felt that the greater tuberosity was not satisfactorily replaced. An open operation was therefore done with the idea of fixing the tuberosity in place either with a bone peg or with fascia. When the region was exposed, however, the tuberosity was found in such good position that nothing was done except to close the wound and not look at the roentgenograms any more. Four of these cases were treated in a sling and swathe, and active motions begun in two weeks. Two were put up in

Fig. 3.—Surgical neck fracture in a woman, aged 60: Judging from the anteroposterior view, the treatment should be a sling and swathe. The axillary view shows the true condition of affairs and the necessity of reduction. An axillary view should always be taken.

airplane splints, which were removed at the end of a month. These cases all had perfect anatomic, functional and economic results, including the shoulder that was operated on. One of the other two cases was a six months old fracture-dislocation in an aged and feeble woman, and it was thought best to leave things as they were. As a matter of fact, she died within the next year of heart failure. The last case was one of eight months' duration, and open reduction was attempted. This was a failure, and during the attempt the humerus was fractured at the surgical neck. The head was then removed. The only benefit the patient derived from the operation was a clearing up of circumflex paralysis and atrophy of the deltoid which had followed the dislocation. He regained only from 25 to 50 per cent function and economically had to be rated at about 25 per cent. The best form of treatment for these cases therefore would appear to be early reduction followed by early active motion.

In contrast to the dislocations accompanied by fracture of the greater tuberosity are those associated with fracture of the surgical or anatomic neck. There are five such patients in this series, four men and one woman, averaging 39 years of age. Before considering them let us look at the problem that they present. The dislocation is usually of the forward type, and it is usually the continuance of the force that brought about the dislocation that is responsible for the fracture. The diagnosis of dislocation of the shoulder is not difficult, as the absence of the head from the glenoid is a fairly striking phenomenon. The danger is in overlooking the associated fracture. Careful examination will usually elicit crepitus, and the head of the humerus will be found not to rotate with the shaft. The amount of swelling is usually much greater than in cases of simple dislocation, and while the size of the hematoma may hinder physical diagnosis, its very presence should make one suspicious. The manual reduction of a fracture dislocation of this sort is a difficult feat and not often accomplished. It can be done, however, in fresh cases in suitable individuals, and, before deciding on operative procedure, traction in abduction on the shaft should be applied, and an attempt made to manipulate the distal fragment back into the glenoid cavity. If such a maneuver fails, operation is the next step. The replacement of the head, which is frequently found upside down, is often difficult even by this method. Every effort should be made to get the head back into position, for once this is done, advantage can be taken of the open exposure to secure apposition of the fractured fragments, even applying internal fixation if necessary. Although removal of the head seems a simple and apparently obvious thing to do, it must not be done except as a last resort. The functional results are bad. When the head is removed, muscle attachments are destroyed and a weak shoulder results. Another alternative is to allow the fragments to unite in the position of dislocation and then try an open reduction. This results in either failure to reduce the dislocation or refracture in attempting to do so, and frequently both. The case of open reduction previously mentioned under dislocations with fracture of the greater tuberosity is an example of what will probably occur in these other cases if union is waited for before reduction is attempted.

Of the five patients treated at the Massachusetts General Hospital one went home against advice before any treatment was started. An open reduction was done in a case of two and one-half months' duration, complicated by a fracture of the upper third of the same humerus. Reduction was accomplished, but a post-operative osteomyelitis of the head of the humerus set in, and the final result was a practically ankylosed shoulder. One case of dislocation was accompanied by a fracture of the anatomic neck. The head was removed and active motion started in three weeks. This patient got a nearly perfect functional and economic result—a very fortunate case, and one that should not be taken as a standard. A case of three months' duration was successfully reduced by open operation but was redislocated after two weeks. This second dislocation was reduced by closed manipulation, and the patient later got a perfect functional and economic result, and also

Fig. 4.—Comminuted fracture of upper end of humerus: Anatomically it would be classed as a fracture of the surgical neck and fracture of the greater tuberosity. The arm was put in a sling and swathe and active motion begun in five days. The view on the right shows the condition one year later; the patient has normal motion and no symptoms.

a perfect anatomic result, except for a little thickening about the head. The last case was one of six weeks' duration. The patient was put up in abduction with skin traction preparatory to attempted reduction but refused further treatment after two days. These poor results bear out the conclusions drawn by Gerard-Marchant from his large series of similar injuries in which normal function was obtained in only 50 per cent of the cases.[4] Good results have been reported,

4. Gérard-Marchand: J. de chir. **31**: 695 (May) 1925.

however, from the use of prolonged traction in abduction.[5]

Epiphyseal separations are confined to patients under 20 years of age, at which time the epiphysis has usually united to the shaft. Growth in the upper end of the humerus takes place in early life from three centers of ossification, one for the head and one for each of the tuberosities. At about 7 years of age these centers fuse to form the upper epiphysis, which unites with the shaft at about 20 years of age. Most of the growth

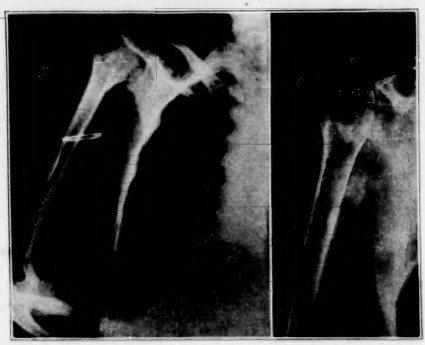

Fig. 5.—Comminuted fractures of upper end of humerus: These occur in elderly persons. Simple fixation in a sling and body swathe is sufficient. Early active motion (within a few days) is indicated. The result is good normal motion in this case.

of the humerus takes place at the upper end, and consequently in cases of separation it is essential that as near normal reposition of the fragments be obtained as possible. If such apposition cannot be secured by manipulation, open operation should be resorted to. After the first seven years of life the epiphysis becomes more and more cone shaped, so that after a successful reduction the somewhat pointed end of the shaft fits securely in the depression in the head and there is little tendency for the deformity to recur. A differential diagnosis between this condition and a fracture of the surgical neck can be made definitely only by roentgen examination, but the injury may be suspected from the age of the patient. The three patients in this series were 15, 16 and 17 years old, which is slightly above the average. In one case there was no displacement, being more of a sprain than an actual separation, but the roentgenogram showed a definite widening of the epiphyseal line. The arm was placed in a sling and swathe, and active motion was started in one week. In the other two cases manipulation was done over the fluoroscope but without success. Open reduction was then performed, and the arm put up in abduction with skin traction. In neither case was any type of internal fixation necessary. Motion was begun after three weeks, and excellent final results were obtained.

There were twenty-four cases of transverse fracture through the surgical neck with or without displacement. The diagnosis of this type of fracture when displacement is present depends on the almost constant type of deformity. The head, being still in the glenoid cavity, preserves the normal contour of the shoulder. The forward and inward displacement of the shaft, however, leaves a hollow on the lateral aspect of the shoulder about three fingerbreadths below the tip of the acromion. The upper end of the shaft can often be palpated anteriorly. Care should be taken in ordering roentgenograms of this region to ask for a lateral view; that is, one taken from above with the arm in abduction and the plate in the axilla. In this way a forward displacement of the shaft is shown, whereas it may easily be overlooked if only a posterior view is taken (fig. 3). Fifteen patients were under 20 years of age. There were none between 20 and 45, and only nine over 45, the average age being 35 years. Owing to the prevalence of displacement and overriding, manipulation under ether was necessary in nineteen cases. Those in which a satisfactory result was obtained were put up in Thomas splints in abduction with skin traction. Manipulation failed to secure adequate reduction in six cases. Before an open operation was resorted to, these patients were treated in abduction traction for a period of from four to seven days. In none of these was position improved, and they were all openly reduced. Two patients were immediately treated by means of airplane splints with the forearm horizontal, and later were given slings and body swathes. In none of these cases was active motion begun early; that is, within ten days. In seven cases, active motion was started in from two to four weeks, and the remainder were kept immobilized a full four weeks. I think that these results show that manipulative reduction is not easy in a fracture of this type when the upper fragment is small and almost uncontrollable. Success depends on complete relaxation, obtained by ether anesthesia and not by gas oxygen, and on competent assistants who understand the nature of what has to be done. The arm should be brought into abduction, and strong, steady traction applied before attempting manipulation. I think one of the chief reasons for failure is that adequate traction is not maintained for a long enough time. Four or five minutes is a long time to wait, and the temptation to try manipulation after a minute or so is often too strong for one. There is no set maneuver for reducing these fractures. The assistant's fist in the axilla sometimes helps to control the

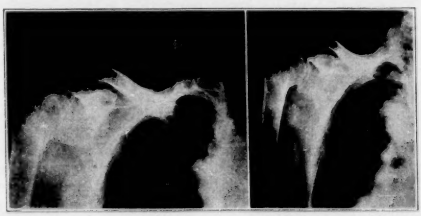

Fig. 6.—Comminuted fracture of upper end of humerus: This is the type that used to be treated in an airplane splint for four weeks or more. The view on the right shows the end-result obtained by the method now used; i. e., fixation by means of a sling and swathe and early active motion.

head of the humerus. If the overriding is not corrected by traction, angulation of the fragments by means of hyperabducting the arm may permit the fractured surfaces to engage. These are the procedures most generally used, yet I have seen success follow an exactly opposite maneuver when the arm was hyperadducted across the chest toward the other shoulder, and the fragments were angulated into position in this way. Five of the six open reductions were in patients

5. Taylor, R. T.: Fracture Dislocation of the Shoulder, Arch. Surg. 17: 475 (Sept.) 1928.

under 20 years of age. It is important to strive for good anatomic restoration in all cases, but when dealing with children one should keep in mind the dangerous fact that they are likely to get good results even with uncorrected displacement.[6]

Out of our twenty-four cases, two were lost track of. Of the remaining twenty-two, seventeen had perfect

TABLE 2.—*Comparison of Age Incidence, Treatment and Time of Starting Active Motion of Transverse and Comminuted Fractures of the Upper End of the Humerus*

	Transverse Fracture of Surgical Neck	Comminuted Fractures
Age of patients	Under 20 yrs.....16 Between 20-45 yrs. 0 Over 45 yrs.....10	Under 20 yrs..... 3 Between 20-45 yrs. 1 Over 45 yrs.....46
Traction	48 per cent	15 per cent
Airplane splint	12 per cent	14 per cent
Sling and swathe	20 per cent	67 per cent
Operations	20 per cent	4 per cent
Age of patients operated on.	Under 20 yrs..... 5 Over 45 yrs..... 1	Under 20 yrs..... 0 Over 45 yrs..... 2
Time of starting active motion	Under 2 wks..... 0 2 to 4 wks..... 7 Over 4 wks..... 8	1 to 10 days.....21 10 days to 2 wks.. 9 2 to 4 wks..... 9
Miscellaneous	2 cases lost track of or died within a year	9 cases lost track of or died within a year

results anatomically, functionally and economically. One case had a very poor result, being rated A_1, E_1, F_1; in other words, only about 25 per cent of the result striven for in each category was obtained. It is only fair to say that this patient was a very old, feeble woman, semiirrational, who would not or could not cooperate at all.

The largest group of fractures, fifty in number, came under the heading of comminuted. These are the ones I spoke of as being often unclassifiable on an anatomic basis. They were in a much older group of patients than the transverse surgical neck fractures. None of the latter were over 45 years of age, while forty-four of this group were above that age, the average age being 61 years. Only three were under 20, as a contrast to the fourteen in the first group. Apparently, like old ice, old bones do not break cleanly. It also requires less violence to break them, and consequently the displacement is usually not as great. It is not correct to call these fractures impacted, as is frequently

TABLE 3.—*Comparison of the Present-Day Treatment of Transverse Fractures of the Surgical Neck with the Treatment Seven Years Ago*

		Type of Treatment					
Years	Cases	Traction	Airplane	Plaster Shoulder Cap	Sling and Swathe	Motion Within 2 Weeks	Operation
1921-1924	19	26%	37%	12%	5%	None	20%
1924-1930	26	48%	12%	....	20%	None	20%

done. They are comminuted, not impacted. It is the frequent lack of displacement that has been responsible for the idea that they are impacted. In any elderly person with a history of injury to the shoulder, a fracture of this type should be suspected. It is not necessary to immobilize the arm as was formerly done. If there is displacement, an attempt should be made to reduce it. While one should always strive for good anatomic results, failure to secure exact replacement is not as serious a matter as with the previous group of fractures. In other words, if closed attempts at reduction fail, one should hesitate longer before employing operative means. Although this series contained twice as many patients as the preceding, only two, or one-third as many patients, were operated on, and as it turned out the final results were better.

Fifteen per cent of these cases were treated by abduction and skin traction, and in 67 per cent the arms were supported simply by a body swathe and sling. The remaining 14 per cent (exclusive of open reductions) were treated in airplane splints or plaster. This is the type of apparatus that has been gradually losing ground in favor of the sling and swathe and early motion. Of the thirteen airplane splints employed, three were used in 1923, four in 1924, and only six in the last six years. Early active motion can be started in a few days; in twenty-one cases, active motion was begun inside of ten days; in nine cases from two to three weeks' fixation was employed, and nine fractures were kept immobilized for a month. The percentage of cases started on early motion is much higher at present than it was ten years ago. To show this change in the type of treatment I have compared this group of cases with thirty-nine similar fractures treated in the three years from 1921 to 1924. The comparison can best be shown in tabular form (table 3).

End-results cannot be compared because our present follow-up system was begun in 1923, and data on the earlier cases are not satisfactory. The results from the

TABLE 4.—*Comparison of Present-Day Treatment of Comminuted Fractures of the Upper End of the Humerus with the Treatment of Seven Years Ago*

		Type of Treatment					
Years	Cases	Traction	Airplane	Plaster Shoulder Cap	Sling and Swathe	Motion Within 2 Weeks	Operation
1921-1924	28	4%	60%	10%	17%	1 case	..
1924-1930	42	15%	14%*	....	67%	21 cases (all inside of 10 days)	4%

* Since 1924 there have only been six fractures immobilized in an airplane splint, or about one a year.

present methods of treatment are good, however, and no comparison with the past is needed as a foil for them (table 5). Three patients were lost track of, and five died before they had been followed a year. Of the remaining forty all but one had a good anatomic result. All had good economic results. All except three had normal functional results, and these three had 75 per cent normal motion (fig. 4).

This type of case, the comminuted fracture through the anatomic or surgical neck or both, often with involvement of the greater tuberosity, is one that responds readily to simple fixation and early active motion. It is found in elderly patients in whom early motion is advisable and cumbersome apparatus is not (figs. 5 and 6). It was in a similar group of cases that Lucas-Championnière in 1886 obtained his best results by early massage and early active motion. It has taken us forty-five years to learn the lesson; let us not forget it now.

CONCLUSIONS

1. Classification on anatomic lines is sometimes inconvenient and difficult. A division into two groups, transverse fractures of the surgical neck and comminuted fractures, obviates uncertainty of exact location and accords with different lines of treatment.

6. Ashhurst, A. P. C.: Ann. Surg. 90: 556 (Oct.) 1929.

2. Fracture of the greater tuberosity is not common without associated injury, such as additional fracture or dislocation. Fixation in abduction is usually sufficient treatment.

3. In fracture dislocations the most common fracture is that of the greater tuberosity. It is seldom necessary to treat the fracture. When the dislocation is reduced, the fractured fragment returns to position.

Dislocations with separation of the head are difficult problems. They must be considered individually and require guarded prognosis. Removal of the head should be avoided if possible.

4. In epiphyseal separation, exact reposition is necessary. Open operation is therefore often indicated. Once replaced, the reposition is stable.

5. Transverse fractures of the surgical neck occur in young people and are prone to displacement. Good reposition is necessary, often requiring open operation. Manipulative correction is often difficult.

6. Comminuted fractures occur in elderly people, and displacement is not a feature. Simple fixation suffices, and early motion is desirable.

TABLE 5.—*End-Results of the Different Types of Fractures of the Upper End of the Humerus Treated Over the Past Seven Years at the Massachusetts General Hospital* *

Types	Anatomic					Economic					Functional					
	4	3	2	1	0	4	3	2	1	0	4	3	2	1	0	
Transverse surgical neck, 26 cases	18	3	2	1	..	20	2	1	1	..	19	3	1	1	..	2 cases lost
Comminuted, 50 cases	41	2	..	..	..	43	..	..	..	..	39	4	..	..	..	3 cases lost; 4 cases ended fatally
Greater tuberosity, 4 cases	3	..	..	..	..	3	..	..	..	..	3	..	..	..	..	1 case ended fatally
Dislocation with																
A, fracture of greater tuberosity, 8 cases	7	..	..	..	1	6	..	..	1	1	6	..	..	1	..	Ao, Eo, Io 6 mos. old case in a patient too aged to cooperate; 1 patient dead; 1 discharged against advice
B, head and neck, 7 cases	4	1	..	..	..	4	..	..	..	..	3	1	..	1	..	
Epiphyseal separation, 3 cases	3	..	..	..	..	3	..	..	..	..	3	..	..	..	..	

* The results are graded from 0 to 4, the latter being perfect.

7. Compared with ten years ago there has been a marked trend away from prolonged fixation and the position of abduction toward simple fixation and early active motion. The end results of such treatment are good.

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ABSTRACT OF DISCUSSION

DR. HENRY C. MARBLE, Boston: When a man dislocates his shoulder, it is my feeling that something in the upper part of the shoulder joint must give way to permit that dislocation; either the greater tuberosity fractures or the supraspinatus muscle tears. Instead of reducing a dislocation of the shoulder immediately, I should advise that a roentgenogram be taken before every reduction. If it is not taken, as Dr. Roberts' plates here have shown, it is often almost impossible to tell that the greater tuberosity has in fact been fractured. The mechanics of that fracture is simple. The head of the humerus descends out of the glenoid cavity, the greater tuberosity is lifted up, and probably the lower end of the tuberosity is not detached materially from the shaft of the bone, and when the dislocation is reduced, the greater tuberosity goes into place. It is important from the point of view of prognosis to know in shoulder injuries whether there is a fracture of the greater tuberosity, as Dr. Roberts has shown, with relatively little disability, or a rupture of the capsule of the shoulder joint and a tear of the supraspinatus tendon, which is an entirely different problem and carries with it much more serious consequences. We have found in the fracture clinic at the Massachusetts General Hospital that, as Dr. Roberts has stated, when the fracture has been reduced either by manipulation or by a surgical operation or is accompanied by such a small amount of deformity that it does not require reduction, early active motion is extremely effective. I will tell exactly how we do it. An old lady has a fracture of the neck of the humerus. She comes to the hospital, and roentgenograms are taken. A sling is put about the neck to hold up the wrist, and a simple swathe is put about the body. That is all. Beginning the first few days, the elbow is moved, or she is permitted to move the elbow, and the hand is opened and closed. At the end of four, five, six or seven days, we take a weight equivalent to a flatiron. She holds it in her hand and swings it back and forth ten or twelve times, three or four times a day, and increases the range of motion by leaning forward until ultimately, at the end of from two and one-half to three weeks, she swings the flatiron over a range of motion giving her 90 degrees forward elevation. We do not attempt complicated shoulder motions but simply forward and backward motion and we hope that at the end of three or four weeks she will have sufficient forward elevation to touch the back of her neck. It is a simple treatment. No other treatment is used.

DR. H. WINNETT ORR, Lincoln, Neb.: I would never use the term mobilization in connection with fracture treatment at all, because I am quite sure that during the last ten years early active motion has done far more harm than good in the treatment of fractures. Any active early motion that implies movement of the fracture fragments is a source of danger to the patient. Traction and immobilization of fractures of the upper end of the humerus, especially if they are intracapsular fractures at the upper end of the humerus, do not seem to have any particular significance, yet they are important. I agree with what has been said about the use of the airplane splint except in late convalescence. A patient with a fracture at the upper end of the humerus needs a certain kind of traction; that he may get good results without it doesn't prove that to do without it is always good treatment. I have been treating fractures of the upper end of the humerus for about thirty years and I think that all my patients have made good functional recoveries. That is one of the easiest fractures to treat. The same is true of elbow fractures. It is possible to get a terrible-looking elbow with perfectly good function, and a shoulder that looks very bad on roentgen examination is often one with which the patient has good function. The age of the patient is a factor of importance. In general, the patient who is treated with the arm in adduction, even if he has motion, is going to have considerable limitation of abduction after the fracture gets well. If the patient has a fracture of the shoulder with dislocation, and especially with the head of the humerus out through a tear in the capsule, one had better give the benefit of early open surgical treatment. On some points I do not agree with the speaker. I do not agree with the treatment of epiphyseal separation in young patients by immediate operation. Twenty-five years ago I saw an article by Dr. Albee of New York describing his position for the treatment of epiphyseal separation at the upper end of the humerus. I have treated from fifteen to eighteen of these young patients in that manner during twenty-five years, and I believe those patients all have perfect results, and not one ever had an open operation. I agree with what Dr. Roberts said in regard to the removal of the head of the humerus in these early cases of fracture dis-

location. It is much more important to secure satisfactory position for union, and then do a reconstruction operation or whatever is necessary, later on. In this manner, as a rule, excellent functional results may be obtained.

DR. JAMES WARREN SEVER, Boston: The whole subject of fractures of the upper end of the humerus, as presented here, seems so ingenious and simple that it appears hardly worth while to treat them. I think that Dr. Roberts has given a false impression, unintentionally of course, as to the treatment and the results to be expected in the use of a sling or swathe and early active motion. He has shown two types of cases, the simpler fractures through the surgical neck, without displacement, and with or without impaction. Those cases do well with the sling and early motion, particularly in elderly people and in people past middle life. Fractures that show very marked deformity or marked separation of fragments of the shaft should be manipulated. I think that the only way these fractures can possibly be held in position is in outward rotation and abduction for a varying period of time. I have always considered that if one can get them reduced in the position of outward rotation and abduction it is essentially the key position because, after all, the disability that these people have later is inability to get the hand to the head, to the mouth and the back of the neck. In the fracture dislocations of the head, I firmly believe that those cases should be reduced. The head should be replaced by means of a closed reduction if possible, and if that doesn't work an attempt by open operation should be made to put the head back on the shaft, not only in the cases of epiphyseal separation but in fractures in adults when the head is under the pectoralis major; sometimes the head has to be taken out, and the results are always poor. I am not in agreement with Dr. Orr. I think that the disability one gets as a result of traction is distraction of the shoulder joint, weakness and even partial paralysis of the deltoid, stretching of the capsule of the shoulder and a permanent weakness of the function at the shoulder.

DR. PHILIP LEWIN, Chicago: I should like to ask Dr. Roberts if he recommends immediate reduction in fracture and dislocation.

DR. HENRY W. MEYERDING, Rochester, Minn.: I should like to emphasize the value of making roentgenograms to include the humerus of both arms. In my experience it is not uncommon to have the attending physician fail to discover dislocation of the shoulder in the presence of fracture of the humerus. By comparison the displacement is readily observed and subsequent embarrassment avoided. Anesthesia, either local or general, manipulation and traction, with early motion, usually give satisfactory results if patients are seen early. When conservative measures fail to hold the fragments properly, operation under proper aseptic surroundings and skilful care is indicated.

DR. SUMNER M. ROBERTS, Boston: To answer Dr. Lewin's question, we do not use any set method of attempting to reduce fracture dislocations of the shoulder. They are extremely difficult to replace. If any one has a method that has proved successful, I should most certainly like to hear of it. In a discussion such as this, one must leave out so many words that one has to be unduly dogmatic. These fractures are not simple to treat. If you come to Boston and see what we do, you will not have that impression. We do not advocate open reduction in cases of slipped epiphyses, but our attempts to reduce them manually have not always been successful, so we have sometimes resorted to open operation. We know that in young people fractures heal extraordinarily well. It is a dangerous thing to rely too much on that, however, and to hope that nature will do better than we have done.

Exophthalmos in Infantile Scurvy.—Infantile scurvy is not an infrequent cause of exophthalmos in children less than 2 years old. The direction of the proptosed eye is uniformly forward, downward and outward. The sudden onset of the condition is characteristic, and its hemorrhagic origin is undisputed. The diagnosis is easily made, and rapid and complete recovery follows antiscorbutic treatment.—Dunnington, J. H.: Exophthalmos in Infantile Scurvy, *Arch. Ophth.* **6**:739 (Nov.) 1931.

HEMIHYPERTROPHY OF EXTREMITIES ASSOCIATED WITH CONGENITAL ARTERIOVENOUS FISTULA *

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A survey of the literature gives the impression that congenital arteriovenous fistula is a rare anomaly. Callander,[1] in 1920, in a comprehensive review of 447 cases of arteriovenous fistula, found only three cases to be congenital in origin. Lewis,[2] in 1930, reviewed from the literature only twenty-four cases of congenital arteriovenous fistula; to these he added six cases of his own. Aside from the reports of Pemberton and Saint,[3] in 1928, and Lewis, various writers have reported an average of one or two cases. Callander gave Bushe the credit for describing the first case in 1827, while Lewis referred to Letenneur's case, in 1859, as being the first recorded. It is, of course, difficult to determine whether many of the earlier cases should be classified as congenital arteriovenous fistula because of meager data.

Arteriovenous fistulas are of two types: congenital and acquired. In the congenital type, the abnormal communications between arteries and veins are usually multiple, and for this reason they are extremely difficult to treat. Lewis stated that only three patients have been cured by surgical procedures. Acquired arteriovenous fistulas usually result from bullet or puncture wounds and, as a rule, a single abnormal communication exists between the artery and vein. Cases of this type are amenable to operation. Numerous cases are recorded in the literature. It is occasionally impossible, however, to determine to which type a given case belongs. Both conditions produce characteristic signs and symptoms, but they vary greatly, depending on the situation and size of the fistula.

Twenty-four cases of congenital arteriovenous fistula involving the extremities were observed at the Mayo Clinic from June 28, 1929, to May 11, 1931. Twenty-three of these are reported in this paper; one case was reported by Wilbur [4] in 1930. Three (not including the case reported by Wilbur) were under observation in 1929, fourteen in 1930, and six cases have been observed thus far in 1931. In only one case was a diagnosis made prior to admission to the clinic. In the other cases various diagnoses had been made from time to time, the usual diagnosis having been varicose veins, or varicose ulcer if an ulcer was present. Eleven of the patients were males and twelve were females. The right arm of three patients was involved, the left arm of five, the right leg of four, and the left leg of eleven.

Amputation of the extremity involved was necessary in two cases (cases 1 and 2 in the accompanying table). These both represented advanced lesions; the right arm of one patient was involved and the left arm of the other. In eight of the cases definite evidence of cardiac hypertrophy was present, indicating that the fistulous

* From the Division of Medicine, the Mayo Clinic.
* Read before the Section on Orthopedic Surgery at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

1. Callander, C. L.: Study of Arteriovenous Fistula with an Analysis of Four Hundred and Forty-Seven Cases, Johns Hopkins Hosp. Rep. **19**: 259-338, 1920.
2. Lewis, Dean: Congenital Arteriovenous Fistulae, Lancet **2**: 621 (Sept. 20), 680 (Sept. 27) 1930.
3. Pemberton, J. deJ., and Saint, J. H.: Congenital Arteriovenous Communications, Surg., Gynec. & Obst. **46**: 470-483 (April) 1928.
4. Wilbur, D. L.: Multiple Aneurysms of the Arteries of the Right Arm Associated with Arteriovenous Fistula and Arterial Embolism: Report of a Case, Am. J. M. Sc. **180**: 221-232 (Aug.) 1930.

tracts in the extremities were causing systemic effects. In seven of the cases there was cardiac hypertrophy graded 1, and in one case cardiac hypertrophy graded 2; this was apparent on general examination, and also by a standard roentgenogram of the heart. In six cases, besides the cardiac hypertrophy, there was an increase in blood pressure. In one of the cases, cardiac hypertrophy was graded 1, but unfortunately a record was not made of the blood pressure, and in another case there was definite evidence of cardiac hypertrophy but no definite increase in blood pressure. In eighteen of the cases the pulse rate was 80 or more a minute. These records were obtained with the patient at rest for from twenty to thirty minutes. In twelve cases the abnormality in the involved extremity was observed at birth. In one case hypertrophy of the extremity was first observed at the age of 2 years, and in the remaining cases it was observed at 4, 5, 6, 9 (three cases), 18, 20 (two cases) and 36 years, respectively. Bruits and thrills in the involved extremities were observed in eight cases. In five of these there was cardiac hypertrophy also, but in three cases in which there were bruits and thrills, cardiac hypertrophy was not present. Cardiac hypertrophy was also observed in three cases in which there was no demonstrable bruit in the region of the arteriovenous fistula. Bradycardiac reactions were observed in eight cases, and the decrease in the heart rate, when the abnormal arteriovenous communications in the involved extremity were closed, ranged from six to sixteen beats a minute. Bruits and thrills were present in only two of the eight cases. In five cases hypertrophic arthritis was present in the terminal joints of the involved extremity, and bone atrophy was present in two cases; this is of unusual

Clinical Manifestations of Congenital Arteriovenous Fistula

Case	Age, Years	Sex*	Pulse	Blood Pressure: Systolic	Blood Pressure: Diastolic	Cardiac Hypertrophy, Grade	Bradycardiac Reaction: Decrease in Heart Rate Each Minute When Fistulas are Closed	Age When Signs and Symptoms Were First Observed	Extremity Involved	Increase in Length of Diseased Extremity, Cm.	Hypertrophy, Dilated and Tortuous Vessels and Trophic Changes, Grade	Presence of Bruits and Thrills	Surface Temperature, C.: Maximal of Involved Extremity	Surface Temperature, C.: Corresponding Area in Opposite Extremity	Elimination of Heat, Calories Each Minute: Involved Extremity	Elimination of Heat, Calories Each Minute: Corresponding Normal Extremity	Oxygen Saturation of Venous Blood, per Cent: Involved Extremity	Oxygen Saturation of Venous Blood, per Cent: Normal Extremity	Roentgenograms of Involved Extremity
1	31	♂	78	Left arm 120 Right arm 150	80 ?	1	16	Birth	Right arm	6	4	Loud bruit marked thrill	36.4	32.0	600	33	94.7	58.2	Marked bone atrophy; hypertrophic arthritis phalangeal joints
2	20	♂	102	Left arm 140 Right arm 128	65 60	1	Not tested	Birth	Left arm	2.5	4	Loud bruit marked thrill	34.0	30.0	...	..	90.0	78.0	Destruction third metacarpal bone
3	42	♂	79	Left arm 160 Right arm 144	100 70	2	11	Birth	Left arm	2	4	Loud bruit marked thrill	35.1	33.5	...	..	92.6	72.5	Bone atrophy; destruction fourth terminal phalanx
4	19	♀	84	130	85	1	10	9 years	Right leg	2.5	3	Absent	34.5	31.9	57	17	96.7	88.0	Negative
5	23	♀	100	140	100	1+	Not tested	Birth	Right leg	6	3	Bruit and thrill present	34.0	31.0	...	..	92.0	74.0	Arthritis right knee and ankle; bony ankylosis
6	22	♂	88	105	75	..	8	Birth	Left leg	6.5	4	Absent	33.9	31.7	50	31	87.2†	61.0‡	Negative
7	16	♀	80	124	52	..	Not tested	Birth	Left leg	3.5	3	Bruit present	34.8	29.0	...	..	95.0	46.0	Negative
8	44	♂	120	114	70	..	Not tested	36 years	Left leg	Negative	2	Absent	33.3	31.1	...	..	91.0	56.0	
9	22	♀	80	102	80	..	Negative	6 years	Left leg	3	3	Absent	33.7	30.2	1.2§	0.92§	83.0	....	Negative
10	23	♂	80	124	78	..	Not tested	18 years	Left leg	1	1	Absent	31.7	30.7	...	..	90.0	47.4	Negative
11	9	♀	96	116	70	..	Not tested	4 years	Left leg	4.2	2	Absent	33.1	28.1	...	..	91.0	46.0	Negative
12	4	♀	90	100	68	..	12	Birth	Left leg	1.2	4	Absent	32.9	31.1	32	23	....	....	Negative
13	30	♂	96	116	86	..	8	Birth	Left leg	Negative	4	Absent	31.2	30.7	...	..	84.4†	72.6‡	
14	49	♀	74	104	64	..	Not tested	9 years	Left leg	0.5	1	Absent	32.6	29.7	...	..	67.3	28.7	Negative
15	22	♀	80	98	75	..	Not tested	Birth	Left leg	2	2	Absent	32.8	29.9	...	..	90.0	....	Negative
16	48	♀	75	120	65	..	Not tested	Birth	Left leg and left side of body	7	4	Absent	36.2	34.6	...	..	....	....	Hypertrophic arthritis tarsal joints
17	5	♂	100	75	25	..	Not tested	5 years	Right leg	1.9	2	Bruit present	35.1	31.5	...	..	76.0	31.0	Negative
18	19	♂	84	112	76	1	6	9 years	Right thigh	2.5	3	Absent	32.0	31.0	...	..	79.0‡	74.0†	Negative
19	29	♀	76	Right arm 110	75	..	Negative‖	Birth	Left arm	Negative	2	Absent	33.1	31.0	...	..	87.0	66.0	Negative
20	3	♀	80	...	..	1	12	Birth	Left arm	0.7	3	Absent	33.0	31.7	...	..	....	....	Increase in number and size of left carpal bones
21	18	♂	90	120	80	..	Not tested	2 years	Left arm	Negative	2	Absent	33.0	31.5	...	..	87.7	60.0	Negative
22	32	♂	82	154	70	1	Not tested	20 years	Right arm	0.5	3	Bruit present	36.5	30.0	...	..	94.0	....	Periarticular arthritis phalangeal joints
23	20	♀	76	Left arm 118 Right arm 108	80 76	..	Not tested	20 years	Right hand	Negative	2	Bruit present	....	....	...	..	....	....	Slight arthritis wrist joint

* In this column, ♂ denotes male; ♀, female.
† Left femoral vein.
‡ Right femoral vein.
§ For each square inch of skin surface.
‖ Slowing of apex beat was not observed, but there was a rise in blood pressure in the right arm from 110 systolic and 75 diastolic to 120 systolic and 80 diastolic.

interest in view of the fact that there was a marked increase in flow of blood to the extremity in each instance. That the age of a patient can be estimated fairly accurately by the degree of ossification of various bones is well known. In case 20, however, if ossification of the wrist and hand were to be offered in evidence of age, it would be valid only as applied to the right member (fig. 1). The two roentgenograms were made

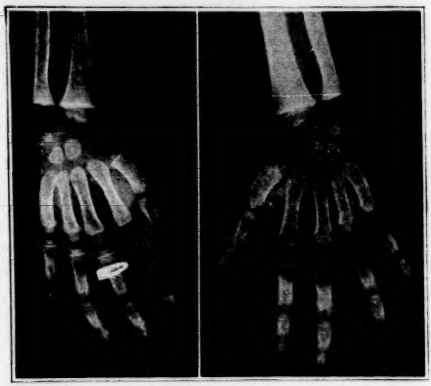

Fig. 1 (case 20).—Definite increase in the size of the bones in the left hand is shown. Four ossified carpal bones are present in the left hand and only three are present in the right.

on the same film and indicate the relative size of the bones in the forearm, wrist and hand. Moreover, three carpal bones were ossified in the normal member and four carpal bones were ossified in the member with the arteriovenous fistula. The anatomic age of the right hand was approximately 5 years, but the subject's age was only 3 years. The cardiac output in case 1 was from 7 to 8 liters of blood a minute, which is approximately twice that for a normal person. The cardiac output was 4 liters per minute after the right arm was amputated.

General examinations and routine laboratory tests were entirely negative in this group of cases, and the points of interest were confined to the extremity involved and the secondary systemic effects of the fistula. There was no clinical evidence to indicate an increase in blood volume, as the blood counts were all within normal range, but determinations of blood volume were carried out in cases 1 and 7. In case 1, Jan. 20, 1931, there was 88 cc. of whole blood for each kilogram of body weight. This test was repeated, May 13, and the blood volume showed 80.9 cc. of whole blood for each kilogram of body weight. In case 7 the determination of blood volume showed 85 cc. of whole blood for each kilogram of body weight. These determinations are all within normal range.

A history of injury was given in case 22 only. This patient thought that his right hand had been injured when catching a baseball, and he attributed the later developments in the extremity to this injury. A break in the skin was not observed. He was 20 years of age when this happened, but the sudden development of a small arteriovenous fistula in the palm of the right hand at that age could hardly account for the overgrowth of bone which was present in the right forearm at the time of his admission to the clinic. An increase in the length of the bones apparently occurs only when the fistula has been established for a considerable time before the ossification of the epiphyseal cartilages. It is evident that this patient had had abnormal arteriovenous communications in the right arm for a long time and that the catching of a baseball merely aggravated the condition. Aside from this history, he presented the same clinical picture as was presented in case 1.

There was marked similarity in the general appearance of the abnormal extremities in this series of cases. The circumference was from 2 to 8 cm. greater than the corresponding normal extremity, and in eighteen of the cases there was an increase of from 0.5 to 7 cm. in the length of the bones in the abnormal extremity. There was tilting of the pelvis and of the lateral curvature of the spine in the seventeen cases. The involved extremity was hypertrophied and showed marked evidence of engorgement, and in fifteen cases ulcers were present (fig. 2). The superficial veins were dilated, graded 2 to 4. There was marked increase in the pulsations of the arteries and definite increase in the surface temperature of the extremity involved, as shown in the accompanying table. This extremity was from 1 to 6.5 degrees C. warmer than the corresponding extremity. These temperatures were taken with the electric thermocouple and indicate accurate observations. Calorimetric studies were carried out in five cases; there was always a definite increase of heat elimination in the abnormal extremity. In case 1 (fig. 3) the normal hand eliminated 33 small calories a minute, and the abnormal hand eliminated 600 small calories for a similar period. In most cases study of the oxygen content of the regional vessels was sufficient to establish a diagnosis of abnormal communications between the arteries and veins in the involved extremity. The blood in each case was withdrawn under oil without the use of a tourniquet, and the determinations of oxygen were made by the Van Slyke gasometric method. Each subject had been lying in a horizontal position, at rest, for at least forty minutes, before the specimens of blood were withdrawn. The various determinations are recorded in the table. In the average case it was only necessary to withdraw blood from one of the dilated regional veins in the affected extremity in order to establish a diagnosis. Blood was also withdrawn from

Fig. 2.—Congenital arteriovenous fistula. The differences in the length and size of the left leg as compared to the right are shown. An ulcer occupies the lower third of the left leg. The surface temperature of the middle third of the left leg was 34.8 C. (94.6 F.). The patient was a girl, aged 16 years (case 7).

the corresponding vessel of the normal extremity and this was used as a control test. In the average subject the difference in the color of the blood from the two extremities was sufficient to establish the diagnosis of an arteriovenous fistula because the blood from the affected extremity was invariably bright red, indicating a high admixture of arterial and venous blood, whereas that from the corresponding normal extremity was dark red, such as one obtains from normal veins.

Fig. 3.—Congenital arteriovenous fistula of the right arm, which was 6 cm. longer than the left. The veins are enlarged, dilated and tortuous, and bruits and thrills were present. The patient was a man, aged 31.

Determinations of this type, however, were not sufficient to permit diagnosis in cases 6, 13 and 18; these three patients had typical congenital arteriovenous fistulas involving the lower extremities, but determinations of oxygen from the superficial veins did not show any admixture of arterial and venous blood. In case 6 (fig. 4) the superficial veins along the mesial and anterior aspects of the left leg showed an oxygen saturation of 55.8 per cent, and blood from a superficial vein in a similar area in the right leg showed an oxygen saturation of 61 per cent. However, blood from the left femoral vein, which was bright red, showed an oxygen saturation of 87.2 per cent, and that from the right femoral vein, which was relatively dark red, showed an oxygen saturation of 61 per cent. In cases 13 and 18 the oxygen saturation of blood from the dilated superficial veins of the involved extremities was 52 and 59 per cent, respectively. In case 13 the oxygen saturation of the blood from the left femoral vein was 84.4 per cent, and that from the right femoral vein was 72.6 per cent. The gross appearance of the blood from the left femoral vein and the left femoral artery was essentially the same, but blood from the right femoral vein was much darker red.

In case 18 the oxygen saturation of blood from the right femoral vein was 79 per cent, and that from the left femoral vein was 74 per cent. In these three cases the admixture of arterial and venous blood was present only in the deep venous channels and could be demonstrated only by a study of blood from the femoral veins. Early diagnosis of intracranial arteriovenous fistulas can be made in a similar manner by a study of the oxygen content of the internal jugular vein.

These three cases, in the past, most probably would have been classified as "hemangiectatic hypertrophy of a limb," such as has been reported by Weber[5] and by Harris and Wright.[6] In fact, one of the best examples of congenital arteriovenous fistula to be found in the literature is recorded in a case report by Harris and Wright, in 1930, under the foregoing title. Their case certainly is a classic example of a congenital arteriovenous fistula but apparently was not so recognized by the writers. The patient was a boy, aged 10 years. When he was 2 or 3 years of age it was observed that his right leg was enlarged. An ulcer was present on the middle third of the leg and there was a definite bruit and thrill which could be heard and felt in the region of the knee, with marked increase in heat in the extremity. The right leg was from 3.5 to 3.75 degrees C. warmer than the corresponding leg. When the right femoral artery was closed by deep pressure, the apex beat dropped ten beats a minute. Oxygen studies were not reported. So far as I am aware, oxygen studies, such as have been carried out in my series of cases, were not carried out in the cases reported in the literature, except in those reported by Pemberton and Saint and by Brown.[7]

The test for diagnosing arteriovenous fistula by a study of the oxygen content of the superficial regional veins proximal and immediately distal to the fistula was originated by Brown, and I have extended this to apply to a study of the oxygen content of the deep veins of the extremity, and also the jugular veins in cases of intracranial arteriovenous fistula.

The term "arteriovenous fistula" in this paper is used to designate any abnormal communication or communications between arteries and veins by means of which arterial blood passes from an artery to a vein without passing through a capillary bed. It includes the various direct and indirect communications described in literature as cirsoid aneurysm, arteriovenous aneurysm, pulsating venous aneurysm, arteriovenous varix, aneurysm by anastomosis, angioma cavernosum, angioma arteriale racemosum, aneurysma serpentina and angioma arteriale.

Fig. 4.—Congenital arteriovenous fistula of the left leg, which is increased in length and size. Dilated, tortuous veins are prominent in the middle third of the left leg. The patient was a man, aged 22.

I quite agree with Dandy:[8] "The various terms 'cavernosus,' 'racemose,' 'cirsoid' and 'serpentine,' whether applied to arteries or veins, are merely descriptive of a superficial expression of a lesion and not of the fundamental pathologic process."

The terms, for the most part, are useless and serve only to confuse the reader. The fundamental pathologic process is the same regardless of whether

5. Weber, F. P.: Hemangiectatic Hypertrophy of Limbs—Congenital Phlebarteriectasis and So-Called Congenital Varicose Veins, Brit. J. Child. Dis. **15**: 13-17 (Jan.-March) 1918.

6. Harris, K. E., and Wright, G. P.: A Case of Hemangiectatic Hypertrophy of a Limb and Observations upon Rate of Growth in the Presence of Increased Blood Supply, Heart **15**: 141-149 (May) 1930.

7. Brown, G. E.: Abnormal Arteriovenous Communications Diagnosed from the Oxygen Content of the Blood of the Regional Veins, Arch. Surg. **18**: 807-810 (March) 1929.

8. Dandy, W. E.: Arteriovenous Aneurysm of the Brain, Arch. Surg. **17**: 190-243 (Aug.) 1928.

the arteriovenous fistula is in the foot or in the cranial cavity. Intracranial arteriovenous fistulas offer the best opportunity for a study of the gross appearance of the abnormal arteriovenous connections. Dandy stated: "Since the veins are free from all accessory coverings, it is possible to see through their walls and detect the pulsing red, arterial blood against a background of black venous blood." Cushing and Bailey,[9] while exploring the great vessels of the neck in a well advanced case of arteriovenous fistula (angioma arteriale), observed that the internal jugular vein was markedly enlarged and that "it looked much lighter in color than normal, and on inspection, though the vein was not definitely pulsating, one could see what appeared to be a current of arterial blood passing down in the venous stream."

If one could only visualize the regional vessels and the abnormal arteriovenous communications in the extremities of the group of cases reported in this paper, I am quite sure that one would see the same pictures which have been so accurately described by Dandy and Cushing. This is amply indicated by the oxygen studies which were carried out. In each case there was a high admixture of arterial and venous blood in the regional or deep veins of the involved extremity. The bright red appearance of the blood in most cases was sufficient to warrant the diagnosis of an arteriovenous fistula.

Fig. 5.—Amputated right arm illustrated in figure 3. The volar interosseous artery has been injected with a mixture of sodium iodide and gelatin. Marked dilatation of the artery and vein is shown. Abnormal communications are indicated by arrows. These communications were present in the distal third of the radius; *A*, volar interosseous artery, and *V*, cephalic vein.

By perfusing the arterial tree with water under a pressure of approximately 150 mm. of mercury in the amputated extremity in case 1, the bruit and thrill were reproduced and could be distinctly heard and felt in the region of the wrist. The arterial tree was injected with a mixture of sodium bromide and gelatin, and roentgenograms of the injected extremity were made (fig. 5). This illustrated abnormal communications between the arteries and veins. There were also some small communications in the bone itself. These observations were confirmed by dissection of the arm. There were also some small aneurysms in the arteries and veins similar to those previously described by Wilbur.

From a diagnostic standpoint, this series of cases falls roughly into three groups. The first group is well illustrated by case 1. The general picture in this group is characteristic of that seen in congenital arteriovenous fistula; oxygen studies are not really necessary in the diagnosis of cases in this group. Another group is illustrated by case 10. Bruit was not present and the general picture differed somewhat from that of case 1, chiefly in the dilatation of the regional veins and the absence of the marked engorgement which is so evident in the first group. Study of the oxygen is necessary for the establishment of the diagnosis in this type of case. A third group is illustrated by cases 6, 13 and 18. In this group it was necessary to remove blood from the femoral veins in order to confirm the diagnosis.

Cases of congenital arteriovenous fistula of the lower extremities should not be confused with ordinary cases of varicose veins with or without stasis ulcers. The increased heat in the extremity, the increased length and size of the extremity, the frequent presence of bruits and thrills, the bradycardiac reaction, when present, and the study of the oxygen (removal of blood from the regional veins) should serve to differentiate the two conditions.

In cases 4, 7, 9 and 10, in which ulcers were present, treatment was carried out by the use of heavy Para-rubber bandages, and the ulcers healed promptly and have remained healed. In cases 17 and 18, the treatment was similar, but I have been unable to obtain follow-up letters in these two cases. In case 8 cure apparently was effected by seven injections of quinine-ethyl carbamate (urethane) into the large regional veins. Follow-up letters indicate that there has been no recurrence; however, only eight months have elapsed since the treatment. In cases 6 and 21 improvement followed the injection of the regional veins with quinine-ethyl carbamate, and the use of a heavy Para-rubber bandage. In ten cases treatment was not given.

9. Cushing, H. W., and Bailey, Percival: Tumors Arising from the Blood Vessels of the Brain, Baltimore, C. Thomas, 1928.

ABSTRACT OF DISCUSSION

DR. DEAN LEWIS, Baltimore: Osler has said that no lesion illustrates so well as arteriovenous aneurysm how borderless are the fields of medicine and science. Those practicing internal medicine are interested because the lesion, provided enough blood is shunted from the arteries into the veins, may present the signs and symptoms of aortic regurgitation. The lesion is of interest to the physiologist because of the bradycardiac reaction that follows closure of the communicating artery or the fistula. The surgeon meets problems often insurmountable in attempting to cure these. The subject has now been introduced in the orthopedic section. Indications are, judging from the number of cases which have been cited this morning, that congenital arteriovenous aneurysms are much more common than is usually considered to be the case. They have been described in surgical literature under various names, and this accounts for much of the confusion regarding them. Branham is usually given credit for having described the bradycardiac reaction. The description of this sign was given by Nicoladoni fifteen years before it was noted by Branham. Nicoladoni did not, however, describe the lesion as a congenital arteriovenous aneurysm. Hypertrophy of the bone and soft tissues of the component parts of the extremity affected is common. It has been well demonstrated this morning. Change in venous blood, as a means of diagnosis, will undoubtedly lead to the recognition of many more cases. Congenital arteriovenous aneurysms offer many surgical problems. Many are difficult, often impossible, to cure because of multiple communications located in the bone. In a number of cases amputation has had to be resorted to because of gangrene following thrombosis or ligation of the principal vessels. Gangrene follows ligation of vessels in continuity at sites of election much more frequently than in many other lesions in which ligation in continuity is indicated. The relation of these congenital arteriovenous aneurysms to the racemose or cirsoid group is of interest to the pathologist. They occur in the brain much more frequently than is generally supposed, as has been shown by the recent work of Dandy.

DR. L. T. LE WALD, New York: I think that elephantiasis may easily be distinguished from hemihypertrophy because there are no roentgenologic bone changes in elephantiasis. I should like to ask Dr. Horton whether one must look for congenital arteriovenous fistula as the explanation of all cases of hemihypertrophy or localized hypertrophy. In one of my cases there were two fingers hypertrophied, and the roentgenogram showed the terminal phalanges as typical of acromegaly. Those two terminal phalanges showed in remarkable contrast to the normal phalanges of the other fingers and the thumb. Is this a type of gigantism which is localized, of acromegalic nature? Another case showed hemihypertrophy from the knee down, involving also the foot and ankle. I have observed this case for twenty years at the New York University Clinic. The boy came because he had to buy two pairs of shoes of different sizes. The case is of particular interest because of the bony outgrowths from the tibia. A third case showed in the roentgenogram a peculiar, perfectly benign growth of bone. There was a biopsy in this case of the hypertrophied soft structures which showed fibrous overgrowth. A roentgenogram of the same boy about fifteen years later taken two or three days ago, does not show any evidence of an atrophic bone condition. There is marked hypertrophy of the soft parts, and the skin temperature is decidedly elevated over the involved leg. I shall reexamine the patient with interest and try to elicit signs as to whether this is a true case of congenital arteriovenous fistula. The patient also shows a lack of symmetry about the head. The left eye is lower and roentgenographically shows congenital absence of the posterior orbital wall, associated with pulsating ophthalmos. This is the second case of this sort that I have seen, and in both cases the orbital defect was on the left side. In the first case Dr. Dandy of Baltimore successfully repaired the defect by a sliding bone graft operation. Dr. John Wheeler of New York confirmed my diagnosis in each case.

DR. W. M. YATER, Washington, D. C.: I should like to emphasize the value, as a diagnostic aid, of determining the oxygen content of the venous blood in the region of the fistula. In 1927 I reported a series of cases of arteriovenous fistula in which the definitely and often markedly increased content of oxygen of the venous blood was used for the first time as a diagnostic procedure. The idea was that of Dr. George Brown, with whom I was working at the time and with whom Dr. Horton is now associated. The diagnosis of fistula of the acquired traumatic type is easy; but in congenital cases it is more difficult, and this test is pathognomonic. There are two important reasons for relieving the patient: the local conditions which tend to produce gangrene, and the ultimate cardiac failure which will come about in large arteriovenous fistulas. I have used the method for producing experimental heart failure in dogs and it works in almost 100 per cent of the cases if the fistula is large enough. I should like to ask Dr. Horton whether any of the rare cases of hemihypertrophy of the face have been found to be due to congenital arteriovenous fistula.

DR. B. M. BERNHEIM, Baltimore: I was rather amused at Dr. Lewis's remark that the general surgeons had thrown the subject of arteriovenous fistula into the orthopedic section, because I notice that they have followed it in here. I subscribe to the ideas expressed by Dr. Lewis. Having seen a number of such cases I have been impressed with the fact that the condition is due not so much to a lack of capillary circulation as to an imbalance between arterial and venous flow. There is, necessarily, a communication between the arteries and the veins, but the arterial inflow seems to be greater than the veins can accommodate. Furthermore, in certain of these cases there seems to be a split artery or a double arterial supply. I think that it is a mistake to inject the veins or to try to obliterate them otherwise, because it simply makes matters worse. More to the point would be a reduction of the blood inflow, and in this connection I like to use the fractional method of ligation. In a recent case in which the communication was in the hand, I ligated both the radial and the ulnar arteries at one sitting. This patient had a bruit in her hand which was somewhat lessened but not completely stopped by this maneuver. At a second sitting I ligated the interosseous artery and later tied off the brachial. She had two arteriovenous fistulas, by the way, both of which I tied off, but in successive stages. Following these procedures the bruit disappeared but the angiomatous condition was still rather obvious. There was no sign of gangrene. I mention this method of treatment in such cases because I think that in a certain number of them it will thus be possible to achieve success and avoid amputation, for, after all, amputation is but a confession of failure.

DR. H. W. MEYERDING, Rochester, Minn.: This interesting series of cases indicates that congenital arteriovenous fistulas in the extremities are more common than one would expect from a survey of the literature dealing with hemihypertrophy of the extremities. One should suspect an arteriovenous fistula when a patient presents himself because of an overgrowth in an extremity, especially if this was first observed during the growing period. Overgrowth of bone in an extremity occurs perhaps more frequently associated with chronic inflammatory disease, arteriovenous fistula. This type of case is not amenable to surgery except in rare instances. It is extremely difficult and usually impossible to determine the site of communication between the arteries and veins, and attempts to close these abnormal communications are usually not successful. Amputations frequently follow such attempts. That is borne out by the fact that in the twenty-seven cases which are reported in Lewis's study, thirteen of the patients had amputations—six of the arms and seven of the lower extremity. Our experience at the Mayo Clinic conforms to this study. The use of a Para-rubber bandage is indicated in this type of case, especially in the presence of ulcer formation, as these cases can frequently be healed by having the patient wear the bandage for an indefinite period. From an orthopedic standpoint, the heel and sole on the shoe for the normal extremity should be built up so as to prevent tilting of the pelvis and lateral curvature of the spine. Healing following amputation in cases of this type is prompt, and we have had no difficulty in the handling of these cases from that point of view. Corrective surgery such as bone shortening operations can be carried out in the extremities without any particular danger or alteration in the blood flow.

DR. B. T. HORTON, Rochester, Minn.: In answer to Dr. Yater's question, I have seen one case of facial hemihypertrophy associated with arteriovenous fistula. I am well aware that there are other causes for hemihypertrophy of the extremities besides arteriovenous fistula, but if a fistula exists I am sure its presence can be demonstrated by a study of the oxygen content of the blood from the regional superficial veins or from the deep veins of the extremity involved, because if there are abnormal communications between an artery and a vein it will be possible to demonstrate an admixture of arterial and venous blood. Normal arterial blood contains from 95 to 98 per cent oxygen saturation. During its passage through the capillary bed, approximately 20 per cent is given off to the tissues, and venous blood contains approximately 70 per cent oxygen saturation. The difference in color of blood withdrawn from a regional vein of a subject with arteriovenous fistula and that from a normal vein in the corresponding extremity is often sufficient to establish the diagnosis of abnormal communications between arteries and veins. If the gross difference between the two specimens is not sufficient to establish such a diagnosis, oxygen determinations can readily be made and will invariably show a high admixture of arterial and venous blood. The diagnosis of intracranial arteriovenous fistula can be made in a similar manner by a study of the oxygen content of the blood in the internal jugular veins. Waiting for the development of bruits and thrills before making a diagnosis of arteriovenous fistula is like waiting for the development of a mass in the epigastrium before making a diagnosis of carcinoma of the stomach. Bruits and thrills, for the most part, represent advanced lesions. The most important treatment is to isolate the abnormal communication or communications between arteries and veins, and tie them. In congenital arteriovenous fistulas, however, the communications are usually small and multiple, and for this reason surgical measures are not satisfactory. Apparently only three patients have been cured by this method. By injecting the regional veins in a small number of cases, we had hoped to produce a propagating thrombus that would obliterate the abnormal communications; this was apparently successful in one case. I do not feel that this procedure subjects the patient to any unusual risk. An increase in the length and size of the bone apparently is not

observed following unilateral sympathectic ganglionectomy and trunk resection because the flow of blood to the bone itself is not increased. I believe that subjects with arteriovenous fistula have an increased flow of blood to the bone itself and this is the basis for the hypertrophy. The increased flow of blood also accounts for hypertrophy of the soft tissues.

THROMBOSIS OF THE LATERAL SINUS *

JOHN B. POTTS, M.D.
OMAHA

In presenting this paper I desire to honor my former associate, the late Dr. Harold Gifford, who apparently was the first person in Omaha to perform the operation for thrombosis of the lateral sinus with ligature of the jugular vein.

This condition was recognized and cases were reported many years before any operation was done for its relief. In 1880 Zaufal [1] published a paper which for the first time described the treatment of evacuating the sinus and tying the jugular vein and reported a fatal case in which operation was not performed. He did not do the operation until four years later. This report is of such importance that I am including an abstract of his lecture, given at a meeting of German physicians in Prague, Dec. 10, 1880:

> The most important sequence secondary to suppurative otitis media is sinus thrombosis with its fatal result.
>
> A man, who three months previously had an otitis media in the left ear, came to the ear clinic as an ambulatory patient, October 1, on account of a hemicranic pain. The left drum membrane was bulging and red, and the mastoid process was intact but painful on rather firm pressure. He had a slight nasal and throat catarrh. The patient was quite emaciated. He was catheterized, air was gently forced into the tympanic cavity, and immediately he felt considerably relieved.
>
> October 9, he was taken into the clinic and during the afternoon of the same day, there developed a fever of 40 degrees; chills; oculomotor paralysis, right and left; somnolence; rigid neck; incontinence of urine, and so on, with later maniac spells at times. The patient died the sixth day.
>
> Postmortem examination showed a basilar meningitis, tumor of the spleen, and pneumonia. In the left sinus a massive white thrombus was found. The bulb of the internal jugular vein and the middle part of the sigmoid sinus were entirely closed with a well organized thrombus. In the posterior part of the sigmoid sinus and transverse sinus a freshly walled and partly decayed (or collapsed) thrombosis was found, which extended into the torcular herophili. At the bottom of the sulcus sigmoid a gap was found, so that the swollen mucous membrane of the pneumatic cells was in direct communication with the sinus. Microscopic examination of the tympanic cavity fluid which was found showed the presence of numerous micro-organisms. I believe that perhaps it was these which brought about the infection.

Zaufal presents the question as to whether one is allowed to put his hands into his lap at the beginning of a sinus thrombosis. He denies this, because cases are known in which, in spite of the appearance of a sinus thrombosis, recovery followed.

> Generally it is understood that the sinus thrombosis is caused by a cholesteatoma, an abscess, tuberculosis or an infected area from which the thrombosis originates. . . . Can one eliminate such an infected area? I believe that the foregoing case, in which through an uncollapsed thrombosis the jugular vein leading to the heart was closed, indicates what we must do. I believe that in such cases not only trephining but also tying of the jugular vein and, eventually, opening a part of the sinus alone could be of use.

Four years later he [2] reported eight cases, two in which spontaneous healing occurred, four which he diagnosed and in which he performed operations, and two intercurrent cases of spontaneous healing which he was privileged to observe. Numerous cases which ended fatally after a comparatively short time led him to do further work in trephining in these cases. He assumes the point of view that one should do a trephining operation in sinus thrombosis in order to obtain more statistical material, so that one may determine the question as to whether spontaneous healing or operation would produce more favorable results.

In 1886, Horsley,[3] not aware of Zaufal's work, reported a spontaneous cure and described and advised the same operation, except that he did not consider removing the apparently sterile clot from the torcular end of the sinus. Lane [4] first did the operation in England in 1888, but it was not reported until 1889. In his operation he cleaned out the sinus posteriorly until the clot seemed sterile and ligated the jugular vein. The patient recovered. In 1890 Ballance [5] reported very fully, four cases in which operation was performed. Viereck,[6] in 1898, published a monograph reviewing the whole subject and reported five new cases. At this time he found reports of 170 cases in which operation had been performed, including both those in which the jugular vein was ligated and those in which it was not. Of these, 108 gave sufficient definite information, which he classified thus:

> Furthermore, I have classified in my statistics those cases in which an uncomplicated recovery was made and the ones that showed a small amount of fever, and those cases in which, after healing, there was a prolonged period of fever (postoperative) and the ones that were associated with metastasis. Those cases presenting thrombosis of the jugular bulb were put into a special class with those of pure sinus thrombosis. Fourteen cases were found to be jugular thrombosis. Of the remaining ninety-four cases of sinus thrombosis, forty were treated by tying and in fifty-four the sinus was operated on, incision and removal of the thrombosis being done without tying. Of forty patients treated by tying, six, or 15 per cent, died of pyemia; out of thirty-four cases there was metastasis in six cases after tying, so that in 30 per cent there was a metastatic formation and in 70 per cent the healing was ideal. Of fifty-four patients who underwent simple sinus operations, thirteen, or 24 per cent, died of pyemia. Of the forty-one healed cases the septic picture continued for a longer period of time in sixteen cases; in eleven of the sixteen there was no metastatic formation. There was, then, a continuation of pyemia after operation in 53.7 per cent (44.4 per cent with metastatic formation); healing without complications was found in only 46.3 per cent. Of the fourteen cases mentioned, in which there was complication of the jugular bulb, two had a simple sinus operation and in both there was prompt healing associated with metastatic formation after operation, and twelve of the cases in which tying was used healed without complications.

Viereck's concluding paragraph sums up the situation thoroughly:

> I firmly believe that we have with this tying a means which will assuredly lessen the septicemia with a much greater certainty, much more than with a simple sinus operation, and

* Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

* Because of lack of space, this article is abbreviated here by the omission of a chart and a table. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Zaufal, Emanuel: Prag. med. Wchnschr., 1880, pp. 516-517.
2. Zaufal, Emanuel: Prag. med. Wchnschr., 1884, pp. 454-455.
3. Horsley, in Lancial: Thèse de Paris, 1888, p. 218.
4. Lane: Tr. Clin. Soc. London **22**: 255-265, 1900.
5. Ballance: Lancet **1**: 1057-1061, 1114-1118, 1890.
6. Viereck: Deutsche Otologische Gesellschaft, 1898-1900, pp. 7-9.

that in all cases in which we decide to open the sinus, the tying should be done with the sinus operation. The best plan would be to do the tying first, in view of the fact that one can work on the sinus in a much easier frame of mind without having to consider disintegration of the thrombosis or an air embolism into the sinus.

The first operation for thrombosis of the lateral sinus in Omaha and in the state of Nebraska, so far as I can learn, was done by Dr. Harold Gifford.[7] In 1905 he published an article reporting five cases with three recoveries and two deaths. The first patient underwent operation, July 28, 1905. Gifford exposed the sinus and removed the clot until free bleeding occurred at both ends, but he did not tie the jugular vein. The next patient was operated on April 15, 1909, and at this time I was his assistant. In this case the sinus was exposed up to within about an inch of the torcular before free bleeding occurred; the jugular bulb did not bleed. The internal jugular vein was tied with a double ligature and severed. These two patients recovered.

Since that time we have had sixty-one additional cases, of which Dr. Harold Gifford had ten, Dr. Patton two, Dr. Callfas eight, Dr. Cassidy nine, and I thirty-two. The jugular vein was tied in fifty-three of the sixty-three cases; bilateral thrombosis was present in none; forty occurred on the right side and fourteen on the left; fifty-four patients recovered, and nine died. The proportion of recoveries was 86 per cent and of

TABLE 1.—*Complications after Operation*

Metastatic abscess	3
Brain abscess	3
Epidural abscess	1
Subperiosteal abscess	1
Nephritis	1
Continued sepsis requiring transfusions	6

deaths 14 per cent. The jugular vein was tied in all the patients who died.

The causes of death were: meningitis, four cases; brain abscess, two cases; multiple abscess, two cases, and pneumonia, one case.

Of the patients who died, one had pneumonia when first seen and died in less than twenty-four hours after arriving at the hospital. Two in the early part of the series died with suspected brain abscess; in one the abscess was found at the operation, but in the other a postmortem examination was not allowed, and the diagnosis was not confirmed. In all these cases the sinus was operated on and the clot removed until free bleeding occurred at the posterior end. Two showed an extension of the infection posterior to the packing toward the torcular (found at postmortem). But as the infection was still localized, it did not seem that this was the cause of the meningitis. In every case the extension seemed to be either a direct extension from the region of the jugular bulb or from the collateral circulation from the sigmoid, the superior and inferior petrosal sinuses.

Of the patients who survived, forty made uncomplicated recoveries and fourteen had complications. There were two cases of infection of the jugular bulb.

The temperature in nearly every case was high, ranging from 104 to 107 F. Two patients in whom it was low were seen late, and their condition was complicated by brain abscess. The white blood count was usually high, but in three it ran low, less than 10,000. The complete hospital records were not available previous to 1926, so that the laboratory reports are given only since that time. The organisms found were: hemolytic streptococcus, ten cases; streptococcus type not given, two cases; *Streptococcus viridans*, one case; gram-positive streptococcus, one case; staphylococcus, three cases and pneumococcus, one case.

In one of our patients, Mr. R. McK., the clot was short, with the center broken down. In this case the clot was evacuated and the ends of the sinus were packed, but the jugular vein was not tied. The sinus was very carefully examined at the end of two weeks

TABLE 2.—*Ages of Individuals*

Ages	Number of Cases
1 year and under	2
From 1 to 5 years	13
From 5 to 10 years	17
From 10 to 20 years	18
From 20 to 30 years	7
From 30 to 40 years	2
From 40 to 50 years	2
From 50 to 60 years	2

and found to have been restored and the blood was flowing through it normally. Mr. R. R. had the shortest convalescence, thirteen days.

This age incidence is interesting, showing the great preponderance of cases in young people, forty-eight cases occurring before the age of 21 and thirty during the first ten years of life. The number of cases occurring since 1909, by years, was as follows: none in 1912 and 1917; one case in 1910, 1914, 1918, 1919, 1921, 1924 and 1925; two cases in 1915 and 1922; three cases in 1916, 1930 and 1931 to date; four cases in 1913 and 1923; five cases in 1911, and seven cases in 1926, 1927, 1928 and 1929. This variation, it seems to me, is best explained by the virulence of the invading infection.

The percentage of deaths by each twenty cases was: first twenty cases, three deaths, 15 per cent; second twenty cases, two deaths, 10 per cent; third twenty-four cases, four deaths, 16⅔ per cent. The first twenty cases include all the patients operated on by Drs. Gifford and Patton and were the earliest group. The percentage of deaths is practically the same as that for the whole group. This is especially interesting as

TABLE 3.—*Percentage of Deaths by Operators*

Operator	Number of Cases	Number of Deaths	Percentage
Gifford	12	2	16.6
Patton	2	0	0.0
Callfas	8	2	25.0
Cassidy	9	0	0.0
Potts	32	5	15.6

at that time hospital laboratories were poorly equipped and hence these first cases were diagnosed and cared for largely in accordance with clinical signs and symptoms. In fact, the blood count was the only laboratory aid shown on these early records. The Queckenstedt-Toby test was not known at this time, and the hospitals were not equipped to carry out blood cultures.

It may be interesting to know the procedure of this pioneer in his work in Omaha. Gifford's first dictum was that if the patient was not doing well the wound should be examined at once. To do this with greater facility he did not sew up the wounds but left them open and packed them lightly with gauze; if the wound was septic he used a wet dressing. His favorite solution for this was 1:5,000 mercuric chloride. If there

7. Gifford, Harold: Arch. Otol. **34**: 304-308, 1905.

was a suspicion of involvement of the lateral sinus, it was exposed; if it looked definitely diseased, it was tested for thrombosis with a Graefe knife.[8] If one uses a fine knife instead of a needle, it is easier to judge the thickness of the sinus wall, and one also often detects a mural thrombus when occlusion of the vessel is not complete. In this way an accurate diagnosis can usually be made relatively early. If a very fine knife is used and only a puncture made, the least possible damage is done to the sinus wall. The surface of the sinus should first be sterilized. The knife is held at an angle of 45 degrees to the plane of the sinus so as not to injure the opposite wall. If the sinus was not definitely diseased, the wound was dressed with a moist dressing and carefully watched. In many cases the removal of the septic bone over the sinus relieved the infection, while in others the septic condition continued. However, with the sinus exposed, the thrombus could be detected fairly early. The most significant single symptom was a sudden rise in temperature; if this was repeated once or twice in twenty-four hours, it was an almost definite indication that the infection was entering the blood stream. A coincident rise in the white blood cells was further conclusive evidence. The appearance of well being of the patient in the early stages should not be misleading; on the contrary, it is an important corroborating symptom. The later symptoms, such as chills, sweats, tenderness of the neck overlying the jugular vein, swollen veins in the neck, engorged veins in the temple and fundus, and metastatic infection, if present when the patient is first seen, are valuable but should not be waited for when the case is developing under the physician's care.

The Queckenstedt-Toby test is of particular importance in young children with a thrombosis of the jugular bulb and in those rare cases that do not show a characteristic elevation of temperature but in which there is little hyperpyrexia and often a low white cell count, and, of course, in cases of bilateral mastoiditis. In our series, however, my associates and I have never had it occur that we could not determine the thrombosed side by direct examination of the sinus.

I feel that too much emphasis cannot be put on keeping the wound open and clean. I have often been struck by the extreme sepsis of mastoid wounds that have been closed with or without a drain. I do not condemn the closure with drainage of the mastoid, but I do think that, if there is any question in the mind of the operator as to the possibility of a beginning phlebitis in the sinus, the wound should be left open.

The exposure of the lateral sinus is not a difficult or dangerous procedure for a trained operator, and the removal of a septic plate of bone covering the sinus or dura is good surgical procedure. It must be borne in mind that the internal plate may appear normal and yet cover a thrombosed sinus which has developed either because the appearance of the bone was deceptive or by extension of the sepsis through a vein. In spite of the advance in knowledge since the reports of the early cases, in which the infection was often allowed to extend to the subclavian vessel proximal, and distal to the torcular before operation, physicians as a rule still wait until the thrombotic closure of the sinus is complete and thus expose the patient to several days' sepsis, high temperature and the danger of septicemia and metastatic infection before instituting the operative attack to eliminate the offending sinus. Is this necessary or may we now, in some of those cases which develop under our care, intervene earlier and save our patients from these grave dangers and also reduce the time of their convalesence? For instance, if, in a case of mastoid infection under observation, either preoperatively or postoperatively, there suddenly develops a high temperature (from 103 to 105 F.), which as suddenly drops to nearly normal with or without a chill, and coincidentally there occurs a rapid increase in the white blood cells with an increased percentage of polymorphonuclears and a reduced hemoglobin, and if at the second rise of temperature the lateral sinus is exposed and instead of a normal thin-walled blue sinus we find one that is grayish white with the wall apparently infected, but which on testing is found to be patent and bleeds freely, are we not justified in attempting to localize the infection at this time?

I would suggest that, instead of waiting at this crucial time, we expose the sinus until the normal sinus wall is uncovered at both ends, if this is possible, then block the distal end and the proximal end in the usual way, take a roll of iodoform gauze about the size of a lead pencil, and gently pack this firmly into the sinus groove, obliterating the lumen from plug to plug, thus leaving the sinus empty. By this procedure the sinus is emptied of the medium which furnishes a culture for further growth, and, with the original infecting focus removed, nature has to combat only the infection in the sinus wall. This procedure at the same time localizes the infection and protects the host from danger of an infected blood stream. If the sinus wall is extensively infected, it may break down and a localized abscess may develop which will obliterate the sinus. If the process has not degenerated to this extent, the infection of the sinus wall subsides, and when the packings are removed the sinus resumes its normal function. In either case, the course of the disease has been arrested. The objection may be raised that if a mural thrombosis is present it may be dislodged. I grant this but hold that if the gauze is packed in gently this danger is remote. Also, it can be said that sinuses may be packed unnecessarily. This is also granted. But packing a normal sinus will do it no harm, and it must be remembered that the condition we are treating is serious. Should this procedure not succeed and should the symptoms continue, no harm has been done. The roll of packing should be removed and the sinus dealt with as the condition indicates. If a mural thrombus was present, this may have broken down. If so, it should be incised and cleaned out. I have submitted this proposition to a prominent general surgeon, and he pronounces the procedure surgically sound. The head of the anatomic department of the University of Nebraska College of Medicine also indorses it, as does the head of the pathology department. I have treated one case in this way with very satisfactory results:

REPORT OF CASE

Miss M. H. was seen in consultation on the fifth day after a simple mastoid operation for acute mastoiditis. For the past two days, after apparently a beginning normal convalescence, she had had a sudden rise of temperature (105 F.) and an equally sudden fall, and a rapid increase of the white cells, with a high percentage of polymorphonuclears. The wound was reopened and the sinus exposed. The sinus wall was gray and thickened but bled freely when tested. As the patient lived out of Omaha and the parents would not consent to having her moved, I decided to try putting the vein to rest, as previously described. The temperature promptly approached normal. The packs were removed five days later, and the patient made a rapid and uneventful recovery.

8. Potts, J. B.: Report of Two Cases of Sinus Thrombosis with Operative Technique, Tr. Am. Laryng., Rhin. & Otol. Soc. 33: 569, 1927.

Of the complications developing after operation, I feel that the comparatively few metastatic abscesses were due to two factors. First, most of our operations were done relatively early, and, second, the jugular vein was tied in all but eleven cases. An additional factor may have been that, from the first case, a radical operation was done and the infected portion of the vessel fully exposed and thoroughly cleaned out. At the torcular end the sinus was exposed for an inch or more beyond free bleeding, so that we could be relatively certain that the plug was beyond the clot. I think that the continuous moist dressing with the wound left wide open is important. I feel that this point of leaving the wound open is extremely significant. It gives the very best chance to allow the wound to become sterile, makes the inspection easy, prevents any pockets of local infection which might disturb the temperature curve and makes the observation and eventually the removal of the plugs compressing the sinus easy. If the cut edges of the scalp are covered with a thick layer of petrolatum, the dressings are not painful. Later, when the wound is clean and sterile, it is easy to close it, with the patient under local anesthesia, and the deformity is practically nil. One thing that I have noticed particularly in operators in their early cases was their timidity in making a free exposure and their anxiety to sew the wound up immediately.

In several cases, including the two of primary jugular bulb thrombosis, the jugular vein was tied while the thrombus was still a mural one.

Transfusion was used in the cases needing supportive measures but not in the sense of a curative agent. The fact that Dr. Gifford succeeded as well without it as did the operators in the later cases with it points to the fact that adequate surgical procedure is the most important element of successful treatment.

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ABSTRACT OF DISCUSSION

DR. E. B. GLEASON, Philadelphia: The method of Dr. Potts for isolating the focus of infection by emptying an infected but still patulous sigmoid sinus and cutting off the blood flow appeals to me as original and logical. When the sinus is exposed accidentally by the removal of normal bone and the sinus appears normal, it is better let alone. However, some patients with normal appearing sinuses have a septic temperature and develop metastatic abscesses but nevertheless make a good recovery. The theory in such cases is that the infection of the sinus is intravenous by way of smaller veins. When the infection is extravenous from overlying bone, and a relatively small portion of the sinus is discolored or covered by healthy granulations, and a puncture shows that there is still blood flowing through it, the method of treatment described by Dr. Potts is adequate. When the exposed sinus is covered by large, pale, flabby granulations or is the color of dirty chamois leather, and puncture shows there is no blood flowing through it, the internal jugular should be first tied and then the sinus laid open and the clot turned out. However, it should not be imagined that ligation of the jugular is a specific for sinus thrombosis. In all of the nine fatal cases in Dr. Potts's schedule of sixty-three cases of sinus thrombosis, ligation of the internal jugular had been performed. Some of the older authors, notably Bacon, formerly advocated waiting twenty-four hours after opening the sigmoid sinus before resecting the jugular, when the patient's general condition was bad, stating that even in cases in which there was no bleeding from the bulb the opening in the sinus often provided sufficient drainage to combat the sepsis. As to the open method of treating the wound resulting from a simple mastoid operation, either with or without exposure of the sigmoid sinus, those that use the fewest sutures will probably have the least to regret. At any stage of the healing process the skin can usually be brought together by a pad placed over the auricle. The diagnosis of sinus phlebitis in most of the cases in Dr. Potts's schedule was made before the valuable Queckenstedt-Tobey test was known. I have in my collection the dura of the posterior fossa of a corpse obtained in the cadaver work of the graduate medical school of the University of Pennsylvania. The right lateral sinus is represented by a small vein ending in a culdesac. There is no sigmoid sinus. Not infrequently the internal jugular vein will be large on one side of the neck and small on the other. In a case seen recently it was as small as the vagus nerve. What would be the reactions to the Tobey test in cases of this kind and what unusual symptoms, if any, would occur if a large internal jugular were ligated in a case in which the corresponding vein on the opposite side of the neck was as small as the vagus nerve?

DR. J. A. BABBITT, Philadelphia: There will be some variance of opinion on the question of both early and possibly too radical intervention, when only initial wall changes have appeared. The question of the coalescent or the fulminating thrombotic type of mastoiditis must have a bearing, both in diagnosis and in procedure. Cognizance must be taken of the fact that on the one hand in many suspected and some actually thrombotic cases the patients do recover spontaneously, and, on the other hand, following many prompt and radical procedures they do not recover. Unnecessary traumatism should be avoided as much in sinus as in general surgical fields, for there is an invitation to metastasis at any stage. The author's suggestion in controlling hemorrhage in the field is interesting. I should like to refer to a simple method often adopted here, that of tucking a narrow strip of gauze under the plate of bone over the sinus, advancing it as the operation proceeds, protecting the sinus from instrument injury and permitting a leisurely opening and examination of the sinus with control of hemorrhage. The Queckenstedt-Tobey test is often deceptive and, though valuable as an adjuvant in diagnosis, is not always conclusive. In one case under study with grave suspicion of lateral sinus involvement, this test appeared conclusive for the left side. An associate suggested retaking the spinal fluid pressure after turning the child on the opposite side. The test immediately became positive for the right side instead of the left. The delay in obtaining successful blood cultures is a serious one and the leukocyte count is often irregular. One case in our series presented a maximum of 13,400, and on three successive days the counts were 6,800, 5,100 and 4,200. I am interested in the views presented on the open dressing and diagnostic study through tiny incision in exposed sinus by the Graefe knife. Dr. Barnhill's studies eliminated the dangers of infection from hypodermic needles, but the sinus contents are not readily revealed through this or a larger diagnostic needle, and it is easy to go through the posterior wall. The author's plan seems a good one. The report does not clearly show the frequency of severing the jugular vein after tying. Many consider this important in preventing the spread of infection along the vessel's sheath. Perhaps Dr. Potts will give his views on this.

DR. LEWIS FISHER, Philadelphia: The management of lateral sinus thrombosis can scarcely follow hard, fast rules and each otologist in the course of his practice solves each case on its own merits. As I visualize an experience of twenty or twenty-five years, I find that my treatment varied from time to time to include the entire removal of the covering of the lateral sinus, the simple opening of the sinus, the evacuation of the contents of the sinus until free bleeding occurs at both ends, the ligation of the jugular vein, and inactivity coupled with watchful waiting; and it is suprising that the results were rather good under all forms of management. I believe that the first treatment of lateral sinus thrombosis is best directed toward its prevention, which is accomplished by a thorough and complete mastoid operation. I have never noticed any particular harm from an uncovering of the lateral sinus during the course of a mastoid operation. One cannot always tell definitely when healthy cells in the mastoid are reached or that the sinus wall underneath apparently good looking bone is normal. Whenever the slightest suspicion arises, I believe the lateral sinus should be uncovered. This will prevent the occurrence of some cases of sinus thrombosis. When sinus thrombosis does develop, my practice is to be content with a wide uncovering of the

sinus to a point at which healthy looking dura makes its appearance. If the sinus wall appears necrotic, it is incised but no attempt is made to remove all the clot at both ends or to ligate the jugular vein unless the patient presents active symptoms of pyemia. In addition to whatever surgical treatment is instituted, I have found the use of neoarsphenamine intravenously helpful. While I realize the difficulty or the impossibility of determining definitely the value of any one remedial agent in the treatment of patients presenting such diverse phenomena as lateral sinus thrombosis, I cannot help but believe that the lack of any fatal cases in my practice for the past several years is in some way related to the routine use of neoarsphenamine. It is administered in early cases (as soon as there is even a strong suspicion that there may be a sinus thrombosis) as well as in late cases.

DR. GEORGE M. COATES, Philadelphia: Symptoms vary, probably, more in lateral sinus thrombosis than in any other we are called on to handle. There are cases with apparently well marked symptoms in which the patients get well without operation; there are also cases with what seem at the time to be characteristic symptoms that prove to be due to other causes, and those that one stumbles on accidentally during the course of a mastoid operation in which most of the symptoms have been absent, and in these cases the patients need the classic procedure. The duration of symptoms is variable. Some cases run such a malignant course that one thinks death is shortly inevitable; other cases run more mildly for a long period of time and the patients get well. I saw a case last winter in which a child had a lateral sinus thrombosis for at least a month, judging from the history, and yet the child got well after the lateral sinus was opened and the jugular ligated. That case was in the hands of a competent pediatrician, who had been keeping the child alive by transfusions every two or three days. I believe transfusions, both before operation, and certainly after operation, form our most valuable aid. Chemotherapy has not been so satisfactory as transfusion. If one can have an immunized donor, one is fortunate. Few have these immunized donors available. I have a case reported three or four years ago, of lateral sinus thrombosis due to a hemolytic streptococcus in which the patient was properly operated on but did not improve as she should have. The temperature kept going up, and on the second day it went to 107 F. I performed a transfusion with the father's blood, as the mother, I thought, was too nervous. The temperature was normal for two days and then went to 107 F. again and stayed there; the child was gravely ill. Then I remembered that eight years previously I had operated on the mother for a similar condition, that I had found the hemolytic streptococcus and that she had recovered, and I wondered whether there might be an immunity in her blood. We transfused with her blood and the temperature fell and did not rise again. Dr. John Kolmer says that in these acute conditions there may sometimes be immunity after eight years.

DR. JOSEPH C. BECK, Chicago: Over a period of years that I have had the privilege of working in large public institutions in which patients usually came late, there was an entirely different mortality compared with the cases I observed in private practice in which I could see them from the beginning. I think that is important. As to exposing the sinus when there is suspicion of pathologic changes regardless of what may happen to the exposed wall, I beg to differ definitely unless one knows beforehand the bacteria that are within the mastoid, for if it is the hemolytic streptococcus that has the ability to attack the blood vessel walls there will be some danger from that large exposure of the sinus. I do not mean to say that I do not expose the lateral sinus in suspicious cases, but I think that exposing the lateral sinus is not altogether a harmless procedure. Dr. Gleason, who has had such large experience, speaks of anomalous conditions present. Anatomic studies made by many men show that there is a great difference in the two sides. Whether the Tobey test gives any information or not, practically all the postmortem cases of anomalous lateral sinuses show that operation has been performed on the wide side and the narrow side was not sufficient to take care of the returned blood. That is an important, although fatalistic point to bear in mind for there is no aid as yet that tells what type of sinus is present anatomically on one side or the other. I have had only one fatal case of lateral sinus thrombosis out of practically thirty cases among those that I have observed from the beginning. In that case, at the suggestion of counsel, I did not ligate the internal jugular and subsequently the patient had many complications, even losing an arm before dying from general sepsis. I think the question of walling off the sinus before operation is a fine practical point, and slitting the sinus instead of puncturing it is another nice point that Dr. Potts brought out.

DR. MERTON PRICE, San Francisco: There is one point that should be stressed and that is the diagnosis of early involvement of the lateral sinus. There is too much tendency to wait for established tests and not to rely on the clinical picture. A rise of temperature from three to ten days following the mastoidectomy calls for careful scrutiny of the lungs and kidneys. A roentgenogram of the chest frequently will show small foci not perceptible to the internist. Many cases of mastoid complications, especially sinus thrombosis, can be avoided by more careful attention to the wound. Vaccines and serums have their therapeutic indications but they are not desirable in the early treatment of thrombosis of the lateral sinus as they frequently complicate the picture. The frequent use of blood transfusion has been found to be beneficial. I believe that the present high mortality in these cases can be markedly decreased by an early investigation and treatment of the lateral sinus.

DR. HENRY M. GOODYEAR, Cincinnati: I have operated on twenty-one patients with lateral sinus thrombosis. I wish to mention also two cases at which I assisted at autopsy: a total of twenty-three cases. Two of the twenty-three cases of thrombosis occurred following an acute tonsillitis—both patients died, one of a metastatic brain abscess, the other of a general sepsis and pneumonia. In twelve cases the vein was resected and in six simple ligation was done. In one case the thrombosis was well above the bulb and ligation was not necessary. In three cases, one of which was bilateral, the thrombosis was discovered at autopsy. In three the vein was resected to the torcular Herophili, and in a like number of cases the superior petrosal sinus was uncovered and opened for about an inch before free bleeding occurred from this vessel. In two cases the resection was carried to the subclavian vein; both of the patients died, one of a splenic abscess, and the other of pneumonia five weeks after operation. At autopsy there was found in both cases perfect healing of the vein without extension into the innominate vein. It would be interesting to know whether a thrombosis can ever extend below the origin of the subclavian vein. I believe that the current in the vessel is sufficiently strong to carry away any extension below its mouth, causing death of the patient by general sepsis or embolus, before a thrombus could form so near the heart as the innominate vein. The method of dealing with the infected jugular will depend on the extent of the infection, if on opening the neck the vessel is found to be red and swollen. I think one is justified in carrying the resection down to the subclavian. The rationale of this procedure was impressed on me by two cases which I saw at autopsy. In both of these cases there was lateral sinus thrombosis and operation was performed; following operation the patients did not do well, the temperature continued to be elevated and death finally occurred from sepsis. At postmortem a large abscess was found between the point of ligation and the subclavian vein, and yet the sinus had healed perfectly in the region of the mastoid.

DR. J. W. JERVEY, Greenville, S. C.: Is it not a fact that as many patients with sinus thrombosis get well without operation as with it? If I were a victim of this condition, no doubt I should wish to be referred to the operating table. But I should like some of the authorities here to answer this question in a way that will carry weight.

DR. HENRY S. WIEDER, Philadelphia: The Tobey test in the hands of many has apparently been unsatisfactory. There is an explanation for some of these failures. I believe one is too prone to expect absolute stasis of the mercury or water when one presses over the diseased side, and to see it jump to the ceiling when one presses the normal side. This does not occur in many cases even when there is present a real thrombosis of the sinus. There may be a mural thrombus which allows some blood to get through, or the thrombus may be so far up

that the inferior petrosal sinus is open and participating in the return venous flow from the brain through the jugular bulb and vein so that when pressure is made over the jugular vein on the diseased side there occurs a moderate rise of mercury with a considerably more rapid and higher rise when pressure is made on the healthy side. Therefore, one should bear in mind that the inferior petrosal sinus can act as an escape valve when the thrombus does not extend far down near the jugular bulb.

DR. JOSEPH I. KEMLER, Baltimore: About 1913, Dr. Harry Friedenwald read a paper on the efforts of nature to cure lateral sinus thrombosis. He reported two cases in which he found that a fistula was actually produced by the thrombosed sinus which extended far out into the lateral sinus and was cured without operation. He reviewed the literature and found cases in which the lateral sinus was seen to be obliterated, either at operation or at autopsy. However, one often sees a lateral sinus thrombosis exist for quite a while without giving symptoms—so-called latent. I have had experience with several such cases. One was that of a patient with cholesteatoma who had a sudden rise of temperature to 105 F. I had him taken to the hospital at once and did a radical mastoidectomy. The lateral sinus was not exposed, and I saw no advantage in doing any further surgery. He was sent back to the ward and apparently made an uneventful recovery, but ten days later he suddenly died. At autopsy it was found that the lateral sinus had an abscess which was almost completely walled off. I was fortunate enough to see it in another case on the operating table—a walled-off abscess in the lateral sinus, existing for some time without symptoms. There was a sudden rise of temperature, with chills. The patient made a complete recovery after operation.

DR. JAMES A. FLYNN, Washington, D. C.: I want to report one apparently dramatic result for chemotherapy. Generally the efficiency of the dyes in septicemia is questioned. This was a girl, aged 13 years, who had been operated on for bilateral mastoditis. On the fifth day following she showed signs of sinus thrombosis and septicemia. I tied the left internal juglar and started blood transfusions. She had a massive infection, as shown by daily blood plate cultures. The organism was a pure culture of hemolytic streptococcus. Fourteen transfusions were administered but the patient remained in the same condition. Then I started gentian violet intravenously. The first injection brought down the temperature to normal in about ten hours. The following day I repeated the administration of gentian violet by the intravenous route and the patient made an uninterrupted recovery.

DR. MATTHEW S. ERSNER, Philadelphia: Several years ago I made a study of 644 mastoid cases in the service of Dr. Coates. From our statistics, I learned that about 50 to 60 per cent of all operative mastoids were due to some form of Streptococcus hemolyticus. We found that several things occurred in this type of case. They all had anemia and we could readily understand this. Whenever we have Streptococcus hemolyticus, anemia results. Therefore the employment of transfusion immediately, whether in small or large amounts, will result in an improvement. When Streptococcus scarlatinae and Streptococcus hemolyticus are present we thought it would be a good plan to administer Dick serum, and therefore in every case with a positive blood culture when we suspect sinus thrombosis we employ transfusion and the Dick serum. A year or two ago, I sent in a preliminary report on this subject. We now have nine cases with positive blood cultures, and three of the patients were operated on by jugular ligation. It is possible that, at the present time with the knowledge of the different flora of the streptococci, we may be able to use other than the Dick serum; but so far we feel satisfied that in these acute cases we save these patients from operation by employing the Dick serum.

DR. JOHN B. POTTS, Omaha: In regard to severing the jugular vein after it is tied, in the cases reported the vein was tied with a double ligature and severed and the upper end of the severed vein was tied to the skin, so that if an infection developed in this portion of the vein it was easy to drain it without reopening the wound in the neck. In regard to the blood, careful examination should be made in all suspected cases, especially those presenting a high temperature. It is good practice to have a blood culture made on every patient who has a temperature of around 105 because that is frequently an early indication of a beginning phlebitis of the lateral sinus. The Schilling test as to the progress of the disease is important and helpful. In regard to transfusions, I feel that it is the most supportive measure we have in this type of infection. However, I am not convinced that it destroys the infection in the blood stream. I have run a series of daily cultures on patients, without transfusions, in which the surgery was complete, the sinus evacuated and the jugular vein tied, and the blood became sterile in a few days after further infection was stopped from entering the blood stream. In regard to Dr. Jervey's question, all I can do is to refer him to the literature previous to 1880. At that time he will find the death rate from lateral sinus thrombosis was high, more than 30 per cent.

TRAUMATIC LESIONS OF THE ABDOMEN

REPORT OF A CASE OF TRANSFIXION BY BRIDGE TIMBER WITH RECOVERY

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CHARLOTTE, N. C.

Abdominal injuries are comparatively frequent in this age of rapid transit, construction work and operation of machinery. Most of the present day gunshot injuries are incidental to the prohibition law and to bootlegging.

Wounds of the abdomen may be divided into penetrating and nonpenetrating. Penetrating wounds present external signs that direct us to the possible location

Fig. 1.—Timber in situ, showing entrance and exit wounds. Arrow points to protruding intestinal loops and omentum at entrance wound.

of the intra-abdominal injury. This is especially true of stab wounds but is not to be depended on in gunshot wounds, since it is impossible to determine the course a bullet will take after it enters the abdomen. Nonpenetrating wounds may present only contusion, as a guide, or no visible external evidence.

There are two main types of injury, those involving hollow viscera, such as the stomach and intestine, and those of the solid or parenchymatous organs, such as the liver, spleen and kidneys. Initial symptoms may be very similar, but the course is somewhat different. In the former class there is shock, some hemorrhage and

later peritonitis. In the latter there is profound shock, profuse hemorrhage and rapid death before peritonitis develops.

Frequently a patient's general condition is very misleading; that is, he may show no alarming symptoms even in the presence of severe injury. On the other hand, the symptoms may at first indicate serious visceral damage and in a short time clear up entirely. Shock

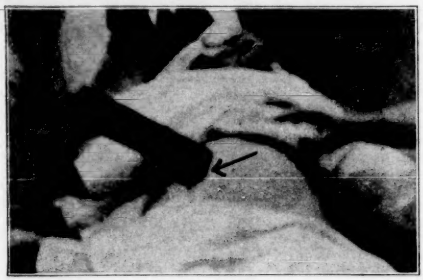

Fig. 2.—Body rotated, showing large entrance wound and width of timber, 3 inches. Arrow points to intestine.

is usually early and may be present in comparatively minor as well as in more serious internal injury. The differentiation is delicate and often difficult. In shock the temperature is reduced, the pulse rapid and weak, the skin cool, respiration shallow, and the patient quiet. In hemorrhage the temperature is normal, the pulse rapid and of more volume, the skin dry, and the patient restless. The leukocyte count, which is increased in hemorrhage, is not apt to be affected in shock. The blood picture other than leukocytosis is of little value, as the red count and hemoglobin are not affected in early hemorrhage. The reduction is not present until later when the blood volume is diluted.

There is frequently a combination of symptoms of hemorrhage from injured mesenteric vessels and of beginning peritonitis from intestinal perforations.

There are certain conditions which are indications of certain injuries. Blood in the urine indicates injury to the bladder or kidney, although there may be extensive kidney injury without blood in the urine.

Abdominal pain is usually an outstanding symptom and is usually more intense in solid viscera injury.

Rigidity of the abdominal muscles is constant and reliable, and is more marked in intestinal injury. Deaver says that "rigidity is literally a sign board that if correctly read and interpreted will lead the surgeon to follow the right road." Nausea and vomiting afford another fairly constant symptom, which indicates peritoneal irritation and is more pronounced in intestinal perforation.

To attempt to make a hair-splitting diagnosis as to what viscus is injured is not so much my purpose as to determine whether there is an injury which demands exploration. This is not always easy, as the symptoms and the general condition of the patient may be very misleading and give no indication of the extent of the injury within the abdomen, so that one does not always have the classic symptoms and unmistakable indications for exploratory laparotomy.

Therefore I would say that with very few exceptions all penetrating abdominal wounds should be explored and every blunt or nonpenetrating injury should be considered as a potential case of visceral injury until proved to the contrary.

The following case report is of unusual interest because of transfixion and the extent of the resulting injury, and also because of the number of complications arising in the course of the illness.

REPORT OF CASE

April 11, 1930, a youth, aged 18, in an automobile accident on a bridge had a piece of timber driven through his abdomen from side to side (fig. 1). The timber had entered just internal to the right anterior superior spine and ranged downward and backward, going transversely through the abdomen and the iliac fossa, and made its exit through the gluteal region, the boy being pinned to the bridge, as the other end of the timber was fixed to the bridge and was 8 feet long. Dr. Vann Matthews, who was on the scene, ordered a saw from a nearby farmhouse and sawed off the protruding timber, thus freeing the boy from the bridge, and then rushed him to Mercy Hospital. The timber measured three-fourths by 3 inches at the entrance wound and tapered to 1½ inches at the exit.

The patient was admitted to the hospital in a rolling chair in a flexed position, as he was unable to lie down because of aggravation of pain when the attempt was made. Loops of intestine and omentum were protruding around the timber and there was hemorrhage from both the entrance and the exit wound. Shock was not pronounced; the pulse was 94 and of fairly good volume, temperature 98 and respiration 26. The patient was composed and surprisingly free from pain, and he had only one-sixth grain (0.011 Gm.) of morphine. He was free from nausea and vomiting, and was fairly comfortable as long as he remained in a flexed sitting position. He insisted that no one touch the plank. He was placed on the operating table and given ether while he was sitting up. The timber was not

Fig. 3.—Bone injury of ilium penetrated by timber.

removed until we were ready to proceed with the operation. A large gush of blood from the two openings followed its removal. As a midline 8 inch incision was made, a large quantity of free blood and clots poured out. There were five holes in the mesentery, ranging from 3 to 4 inches in extent, with torn mesenteric vessels, which were still bleeding. Two loops of the ileum were completely severed, with tears extending down into the mesentery. One other loop had a large perforation through its free border. This intestinal injury was all confined to approximately 2 feet of its length. To conserve

time, this 2 feet of intestine was removed, making only one anastomosis necessary (instead of the two which would have been essential had the loop been left in) and one closure of perforation. Two cigaret drains were put in the pelvis, and the wound was closed. Also, the large entrance wound caused by the timber was sutured. The exit wound, which was much smaller, was left open for drainage. A direct transfusion was given and repeated infusions of saline solution. The patient reacted well, vomited once next morning and made satisfactory progress. After three or four days he took a liquid diet well and had no objectionable distention. Enemas brought good results.

Soreness was felt about the lobe of the left ear, April 20, followed by severe pains, high fever and chills. There was much swelling of the neck, face and left eye. Tenderness and swelling were most marked over the parotid gland. The white cells numbered 73,000. April 25, the gland was opened and drained, exuding very thick pus. April 26, the patient began to complain of abdominal pain and there was nausea and vomiting.

April 27 there was severe hemorrhage from the neck. This was arrested by packing. Transfusions and large quantities of saline solution were given from time to time. The abdomen became much distended and tense; this condition was unrelieved by enemas, and the patient was nauseated and vomited repeatedly. This was at first thought to be of toxic origin resulting from the general septic condition of the neck, as the two conditions unfortunately existed at the same time. April 28, fecal vomiting developed, and the patient appeared to be moribund from intestinal obstruction. An enterostomy was done on the same day through an incision in the upper part of the abdomen. There was marked peritonitis, and loops of intestine were

Fig. 4.—Up in rolling chair. Dressing on left side of neck. Smiling, showing facial paralysis.

adherent to one another and to the peritoneum. The enterostomy tube drained very freely, and improvement was spectacularly rapid. Vomiting ceased immediately and the distention went down. April 30, the second massive hemorrhage from the neck occurred very quickly, filling the bed with a lake of blood. The patient was bleached white and gasping for air. No radial pulse was felt. The hemorrhage was arrested again by packing, and immediate transfusion and saline solution again brought back the pulse and hope of life. Improvement gradually followed for a week and then, May 7, a third neck hemorrhage occurred about 10 p. m., which, like the second, appeared to be the end, as the patient was in a dying state from the great loss of blood, which filled the bed, extending from head to foot, and the patient was gasping for air, with no radial pulse. Saline solution and transfusion were again resorted to, which again revived the patient.

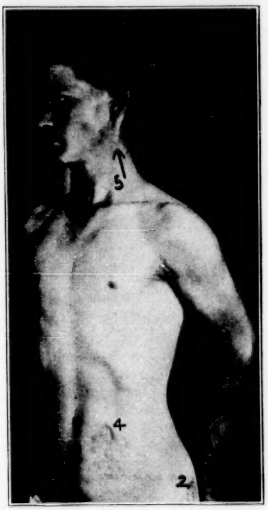

Fig. 5.—Healed scars: 1, entrance scar; 2, exit scar; 3, scar from primary operation; 4, scar from operation for enterostomy; 5, scar from drainage of neck and ligation of carotid artery.

The hemorrhage this time could not be arrested by packing nor could it be controlled by firm and continuous pressure over the wound, as the hemorrhage oozed through all the packing. Finally, about 2 a. m., in desperation after failure to arrest the hemorrhage by continuous pressure applied by hand, it was decided that an attempt to ligate the external carotid was the least of the two evils and offered the best hope of life. Accordingly, light ether anesthesia was given. The wound in the neck was enlarged by incising downward through the tissues, which were inflamed and distorted, so that it was very hard to recognize the structures, and naturally there was further loss of blood in the course of the operation. When the external carotid was reached and ligated there was no further hemorrhage. On inspecting the old sloughing wound above the ligation we found the opening, which had sloughed through the wall of the external carotid. Following this procedure, the patient's blood was again built up by transfusions. The sloughing wound did not bleed any more and gradually healed with granulation, and the patient had no further interruption in his convalescence. A total of thirteen transfusions and gallons of saline infusions were given in the course of treatment. He is now in good physical condition free from all aches and pains and can eat any kind of food and do heavy work. In other words, he is again a normal young man but has a few scars to tell the tale.

Summary in terms of a cat's nine lives:

1. Shocks and hemorrhage at time of accident.
2. Additional shock incident to operation for injury.
3. Peritonitis from both external and internal contamination.
4. Parotiditis and cullulitis of the neck and operation for drainage.
5. Hemorrhage from sloughed external carotid artery.
6. Operation for intestinal obstruction, enterostomy.
7. Hemorrhage from slough into external carotid artery.
8. Hemorrhage from slough into external carotid artery.
9. Operation for ligation of external carotid, with patient already in exsanguinated condition.

Professional Building.

HEMORRHAGIC THROMBOCYTOPENIA IN CHILDHOOD

A CLINICAL STUDY OF TWENTY-ONE CASES *

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AND
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NEW YORK

The clinical reports in recent years relating to hemorrhagic thrombocytopenia in childhood have been largely concerned with splenectomy. During the past six years at the Babies' Hospital, we have observed twenty-one children with the clinical and hematologic picture of hemorrhagic thrombocytopenia. Of these, seven were treated with rest in bed, eight by transfusion and six by splenectomy. Our object in this report is to present the data supplied by this group with particular emphasis on the results obtained with the different methods of treatment used. We believe that hemorrhagic thrombocytopenia is a more satisfactory name than either purpura hemorrhagica or thrombocytopenic purpura, because purpuric manifestations are not essential to the disease and they are frequently the least important of the hemorrhagic features.

MATERIAL

There were twenty-one patients aged from 19 months to 12 years, the average being 4.8 years. Only one patient was less than 2 years of age and six were not over 4 years of age.

Seven were females and fourteen were males. The low incidence of the disease in female children as compared with adult females is probably due to the absence of menstruation in the younger group.

There were no racial limitations. The group comprised six Italian, three Irish, two Negro, two Anglo-Saxon, six German children and one Jewish and one Greek child. Of these, twelve were blondes, seven were brunettes and two were Negroes.

The father of one of the patients had had a splenectomy for uncontrolled bleeding. One paternal aunt, two paternal uncles and one paternal great uncle had had a tendency to bleed. In the twenty-one families the histories of the thirty-eight other children were negative for bleeding, nor did the past histories of any of the twenty-one patients with thrombocytopenia reveal any hemorrhagic manifestations during the neonatal period.

METHODS

Five of the patients were under observation from four to ten months, four from ten to twenty-six months, and four from forty-eight to sixty-eight months. The other eight patients, including the four who died, were observed for shorter periods, none more than two months. The total number of platelet counts of twenty-one patients was 357, or an average of 17 for each patient.

The following methods were employed for technical procedures:

(*a*) Platelet counts were made in 3 per cent sodium citrate solution. (We consider the approximate limits of normal to be from 250,000 to 500,000 per cubic centimeter.)

(*b*) For determination of bleeding time the standard method of Duke was employed.

(*c*) To determine clot retraction a chemically clean test tube was used.

THE CLINICAL PICTURE

The major complaint in all these patients was hemorrhage. There were apparently no significant factors in the past history excepting the factor of infection, which will be discussed subsequently. Previous to the onset of the hemorrhagic thrombocytopenia these children were considered normal. None of them gave any history of having had undue bleeding during the new-born period. The severity, location and duration of the bleeding varied widely in different patients and during different attacks in the same patient. The chronic cases were intermittent with a variable frequency in attacks and with a shifting in the site of bleeding during different attacks. The duration of hemorrhagic manifestations in these patients before our first observation lay between the extremes of forty-eight hours and three and a half years: forty-eight hours, 3 cases; sixty hours, 1 case; seventy-two hours, 1 case; four days, 3 cases; five days, 1 case; seven days, 1 case; nine days, 1 case; fourteen days, 3 cases; one month, 2 cases; six months, 1 case; eleven months, 1 case; thirteen months, 1 case; two years, 1 case; three and one-half years, 1 case.

Purpura was present in all cases at the first hospital examination, although it had not been noticed in two cases at home. In several cases the onset of symptoms consisted in the appearance of purpura alone; in several, purpura and free hemorrhage from the mucous membranes developed at the same time; in others, purpura preceded the bleeding from the mucous membranes. In two cases the parents noted bleeding from the nose and mouth, and blood in the urine before purpura was seen. In only one case were subcutaneous hemorrhages present without notable bleeding from the mucous membranes (case 11). This patient was under the observation of a competent pediatrician for three and one half years and had not bled noticeably from the mucous membranes during this period. This was apparently a true thrombocytopenic purpura with a platelet level of approximately 50,000 per cubic millimeter during hospital residence. No bleeding from the mucous membranes was observed in the hospital.

The purpuric eruptions varied from generalized petechiae to multiple ecchymoses several centimeters in diameter. In a few cases the hemorrhagic cutaneous areas were raised, indurated and definitely palpable. In the majority the eruption was macular. Although these purpuric eruptions were consistent in the marked irregularity of their distribution in different cases, there was a tendency for the eruption to be most marked on the portions of the skin exposed to trauma; that is, over the crest of the ilia and around the knees and the elbows.

Bleeding from the nose had been observed before admission in seventeen cases and was present during hospital observation in eleven cases. Free bleeding from the mouth occurred in six cases before hospitalization. Oozing from the mucous membranes or submucous oral petechiae and ecchymoses were found in seventeen patients at the first physical examination. The peridental gingival margins were the most frequent sites of hemorrhage in the mouth, although free bleeding also occurred from the mucous membranes of the tongue, and, in one case, the tonsil. In all cases in which hematemesis occurred there had been sufficient hemorrhage from the nose and mouth to account for

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* Read before the Section on Diseases of Children at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 10, 1931.

the blood present in the vomitus. We were not certain, therefore, during life that actual hemorrhage from the gastric wall occurred in any of these patients. The same uncertainty exists concerning hemorrhage from the lower gastro-intestinal tract as fresh hemorrhage from the rectum was not actually observed by us, although in two cases the parents stated that they observed fecal material discolored with both fresh and old blood. Blood in the urine was noted at home in four cases. Examination of the urine after admission showed definite hematuria in seven patients. Bleeding from the vagina occurred in only one of the seven female patients (case 3). This patient also had severe purpura with hemorrhages from the nose and mouth. Retinal hemorrhages were seen in three of the eight patients whose fundi were examined. Subconjunctival hemorrhages were found in eight patients.

The spleen was palpable in only five patients. The largest spleen (8 cm. below the costal margin) clinically was found in patient 6, who had had symptoms for thirteen months and in whom splenectomy failed to cause any elevation of the greatly diminished platelet level. The father of this child had had a successful splenectomy for a similar condition.

TABLE 1.—*Relationship of Hemorrhagic Manifestations to Infections: Interval Between Infection and Symptoms* *

Case	Type of Infection	Time Relationship to Onset	Previous Infections Without Bleeding
1	Upper respiratory	21 days	No previous infection
2	Fever "unknown origin"	6½ days	No previous infection
3	Respiratory infection	Simultaneous	No previous infection
4	Pneumonia	22 days	Measles, frequent colds, pertussis
5	Respiratory infection with convulsions	10 days	Chickenpox, 18 months previously
6	Exacerbation of bleeding with unknown type of infection		No previous infection
15	Measles	2 weeks	No previous infection
16	Maxillary sinusitis	Indefinite, present first examination	
17	Upper respiratory	6 days	Measles and chickenpox
18	Measles	19 days	Tonsillitis 1 year ago; pneumonia 4 years ago
20	Bronchitis	17 days	Measles, scarlet fever, pertussis
21	Maxillary sinusitis	Simultaneous	Pneumonia, measles, mumps, chickenpox

* Twelve children, six of whom had had known infections previously without bleeding. None had a history of bleeding at birth, or at any subsequent time. In two the symptoms were first noted at night.

The nutrition and general condition of this group were satisfactory with the exception of a single patient. As mentioned later, two patients had purulent maxillary sinusitis on admission, and one patient, twenty days after the onset of pneumonia, still had clinical signs of consolidation in the right lung. Several patients had severe and moderately severe dental caries. The absence of constitutional symptoms either at the onset of hemorrhagic manifestations or throughout the course of the disease was striking. Despite moderate and severe hemorrhagic manifestations, these patients felt well and were normally active unless curbed by their parents. One boy visited a bathing resort twenty-four hours after the onset of a severe hematuria, which was active at the time he went swimming. Pallor and weakness developed late in some of the patients who had excessive free bleeding.

The lack of any immediate factor to account for the onset of the hemorrhage was also striking. The initial onset of the bleeding and the relapses in chronic cases developed spontaneously. Two children went to bed apparently well and were found in blood-soaked bed clothing the next morning. They apparently had slept undisturbed through the night. A frequent complaint was that the "child bruises easily" and the distribution of the purpura warrants the belief that trauma is an important factor in the development and location of the purpura. One history stated that the onset of bleeding from the mouth followed brushing the teeth.

INFECTION

The relationship of infection to the hemorrhagic manifestations (table 1) in these cases is worthy of consideration in view of the rôle that certain infections, smallpox, measles, diphtheria, typhus exanthematicus, tuberculosis and syphilis, are known to play in the production of bleeding with thrombocytopenia. In twelve patients the history indicated that recent definite infections preceded the onset of hemorrhagic symptoms. In two cases (15 and 18) bleeding followed measles, fourteen and nineteen days respectively, although no bleeding had been observed during the active phase of the measles. In one case (4) hemorrhagic manifestations appeared twenty-two days after the onset of lobar pneumonia and had not been present earlier in the active phase of this disease (reliable observation in another hospital). Nine patients had had infections of the upper respiratory tract sufficiently severe to produce one or several of the following symptoms: high fever, convulsions, cough, nasal discharge, sore throat. In six of the latter, the infection preceded the onset of the bleeding by several days, from twenty-one to six and one-half days. In one case the onset of the infection was simultaneous with the appearance of the hemorrhagic manifestations. In the two remaining, the onset of the infection was indefinite, but both patients had purulent maxillary sinusitis when admitted to the hospital. It is notable that in only one case did the onset of bleeding and that of infection parallel each other. In eleven cases there was a period of from six and one-half to twenty-two days between the appearance of symptoms of infection and the appearance of hemorrhagic symptoms. In the entire group there had been no instances of hemorrhages with the infections which had occurred earlier in life, although many of these patients had had whooping cough, measles, chickenpox and other diseases before the period of their present hemorrhagic history.

The delay in the appearance of hemorrhagic manifestations after the acute infections and the absence of bleeding in the earlier phases of these infections suggests the possibility, clinically at least, that thrombocytopenia may be an allergic manifestation in the bone marrow affecting particularly the megakaryocytes.

THE INITIAL BLOOD PICTURE

All these patients showed thrombocytopenia of varying degree: five had less than 10,000 platelets, three from 10,000 to 20,000, five from 20,000 to 40,000, five from 40,000 to 60,000, and three had counts above 60,000; these were 64,000, 64,000 and 104,000 respectively.

The bleeding time was prolonged in every instance from seven minutes to several hours. The two shortest bleeding times occurred in patients with platelet counts of 32,000 and 50,000; both patients had chronic cases and recovered without treatment.

The clot retraction was markedly delayed or absent in all cases.

The coagulation time was within normal limits in all cases, varying between two and eight minutes. In case 2, with a bleeding time of seven minutes, the delay in

the clot retraction was two hours. In several cases no retraction of the clot was noted in twenty-four, forty-eight and seventy-two hours. In case 4, with a platelet count of 64,000, no clot retraction was present after six days.

Seven of the twenty-one patients had a hemoglobin of less than 55 per cent; four had only 40 per cent, and of these none had leukocytosis. All had a corresponding reduction in red blood cells, the lowest being 1,900,000. No abnormal red blood cells were noted.

Two cases showed leukopenia (9 and 11), the count being 5,500 and 5,200. Both patients recovered and did not have agranulocytosis or lymphatic leukemia.

to several hours. The clot retraction was markedly delayed or absent. We have not been impressed with the value of the tourniquet test as a dependable diagnostic procedure. All cases of hemophilia, leukemia, aplastic anemia, agranulocytosis, syphilis, tuberculosis and known chemical poisoning have been excluded.

RELATIONSHIP OF CLINICAL PICTURE TO PLATELET LEVEL

While thrombocytopenia was present in all these cases, there was considerable variation in the platelet count and in the degree and duration of hemorrhage. In this series, however, there was little parallelism

TABLE 2.—*The Initial Blood Picture*

Case	Number of Platelets	Bleeding Time, Minutes or Hours	Coagulation Time, Minutes	Clot Retraction	Hemoglobin, per Cent	Red Blood Cells in Millions	White Blood Cells in Thousands	Polymorphonuclears	Lymphocytes	Other Cells*
1	64,000	25	6	Delayed	70	3.9	9	63	35	2
2	4,000	13 plus	5½	Delayed	75	4.1	17	32	51	11
3	56,000	60 hours plus	6	Delayed	40	2.5	8	42	51	7
4	64,000	30 plus	2	Delayed	68	3.8	1.2	63	37	..
5	20,000	45 plus	3	Delayed	40	1.9	8.4	72	28	..
6	10,000	10 plus	2	Delayed	40	1.9	8.7	82	13	5
7	20,000	15 plus	2	Delayed	60	2.8	13	82	17	1
8	56,000	16 plus	..	Delayed	73	3.3	8.7	45	50	5
9	8,000	15 plus	4½	Delayed	75	3.8	5.5	44	46	10
10	32,000	35 plus	4½	Delayed	70	4.4	10.4	76	21	3
11	50,000	7	4	Delayed	78	3.8	5.2	29	70	1
12	32,000	7	2½	Delayed	80	3.7	9.05	58	37	5
13	24,000	25 plus	5	Delayed	70	4	9.6	54	45	1
14	10,000	15 plus	4½	Delayed	65	4.3	7.8	78	20	2
15	32,000	24	5	Delayed	40	2.7	5.6	80	18	2
16	10,000	15 plus	7	Delayed	50	2.5	12.5	83	14	3
17	24,000	20 plus	3	Delayed	80	4	14.9	77	23	..
18	56,000	6½ hours	6½	Delayed	40	3.3	10.8	70	23	7
19	104,000	10 plus	8	Delayed	55	2.8	8.2	63	31	6
20	48,000	60	3	Delayed	72	3.1	9.2	75	25	..
21	18,000	14	2	Delayed	90	4	6.6	54	42	4

* Monocytes; eosinophils.

TABLE 3.—*Results in Untreated Cases*

Case	Duration of Symptoms	Initial Platelet Count	Bleeding Time in Minutes	Period of Low Platelet Level	Period of Hemorrhage	Subsequent Platelet Level	Subsequent Clinical Course	Period of Observation	Number of Platelet Counts	End-Results
13	14 days	24,000	25	21 months 144,000	21 months purpura	26th month 296,000	21st to 26th month asymptomatic	26 months	20	Mild case, arrest 21st month
10	48 hours	32,000	35 plus	8 days 392,000	10 days	44th month 504,000 to 750,000	Asymptomatic	4 years	32	No recurrence
12	9 days	32,000	7	8 weeks 48,000	8 weeks	9th week 408,000	Asymptomatic	9 weeks	4	Arrest 9th week
20*	4 days	48,000	60	4 days, 56,000 88,000	4 days	.....	.....	4 days	4	Death; intracranial hemorrhage
11	3½ years	50,000	7	5 weeks 288,000	Asymptomatic after "few weeks"	11th month 496,000	Asymptomatic 14 months	15 months	11	No recurrence
1	1 month	64,000	25	27 days 224,000	1 week	26th month 500,000 to 600,000	Asymptomatic 26 months	26 months	21	No recurrence
19	14 days	104,000	10	9 days 160,000	2 weeks	12th month 376,000	5¾ years asymptomatic	5¾ years	5	No recurrence

* Transfusion after onset of symptoms (hemiplegia) from intracranial hemorrhage, eight hours before death.

The highest leukocyte count occurred in patient 2, who had no anemia nor any discoverable associated infection. No significant changes were present in the differential count excepting in patient 2, who showed a mononucleosis of 11 per cent, and in patient 9, who showed an eosinophilia of 7 per cent. Details of these blood examinations are found in table 2.

THE DIAGNOSIS

The diagnosis rested on clinical evidence of hemorrhage, a low platelet count, a prolonged bleeding time and delayed retraction of the clot. There were no significant changes in the blood except anemia, secondary to hemorrhage, in some of the cases. All had thrombocytopenia. The bleeding time varied from seven minutes

between bleeding and the actual platelet level. In eleven cases which showed the most extensive and severe bleeding the platelet counts varied between 10,000 and 104,000, showing the wide zone in which severe bleeding occurred. The patient with the lowest initial platelet count, 4,000, was entirely free from hemorrhage the fifth day after the onset of symptoms, and, although free bleeding occurred for two and one-half days, the hemorrhage was not more severe than with patients with higher counts. The patient with the highest count, 104,000, had active hematuria and free bleeding from gingival margins, although his count never went below this relatively high level.

The platelet count of ten patients did not exceed 30,000; nine of these recovered and one died. In

eleven patients with counts above 30,000, three died; two after splenectomy and one who had not been splenectomized, from intracranial hemorrhage. Two patients died of intracranial hemorrhage, one an acute, the other a chronic case, with counts of 10,000 and 48,000, respectively.

There were no essential differences in the platelet levels in the chronic and acute cases. In five cases in which there was a history of bleeding from six months platelet level in splenomegaly was comparable to the level in cases not showing clinically enlargement of the spleen.

The platelet count and the clinical picture were frequently inconsistent so far as the actual platelet level was concerned. There was no direct relationship of low platelet level and the severity of bleeding and in the end-results. Cases with the lowest initial counts were frequently less severe clinically than those with

TABLE 4.—*Results Following Transfusions*

	Pretransfusion Data						Posttransfusion Data						
Case	Duration of Symptoms	Platelet Count	Bleeding Time in Minutes	Transfusions First	Interval	Second	Duration of Low Platelet Level	Duration of Hemorrhage	Subsequent Platelet Level	Subsequent Clinical Course	Period of Observation	End-Results	Number of Platelet Counts
2	2½ days	4,000	15 plus	160 cc.	24 hours	160 cc.	4 days 368,000	Immediate arrest	208,000 to 720,000	Asymptomatic	14 months	No recurrence	15
9	11 months	8,000	15 plus	135 cc.	9 days	200 cc.	30 days 24,000	30 days purpura	270,000 4th month	.....	4 months	37th day tonsillectomy; no recurrence	13
16	4 days	10,000	15 plus	200 cc.	48 hours	260 cc.	23 days 96,000	5 days	.....	.....	23 days	Still in hospital; bleeding time 2½ minutes	17
21	6 months	18,000	14 plus	200 cc.	6 days	300 cc.*	12 days 20,000	12 days	.....	.....	12 days	Still bleeding in hospital; bleeding time 25 min.	16
5	4 days	20,000	45 plus	200 cc.	48 hours	200 cc.	11 days 368,000	3 days	544,000 8th month	Asymptomatic	8 months	No recurrence	9
17	5 days	24,000	20 plus	Small	33 days	Small	31 days 240,000	Immediate arrest	728,000 10th month	Asymptomatic	10 months	No recurrence	15
8	11 months	56,000	16 plus	100 cc.	72 hours	100 cc.	4 months 140,000	4 months purpura	.....	.....	4 months	Purpura persists; thrombocytopenia	11
4	48 hours	64,000	30 plus	250 cc.	48 hours	125 cc.	6 days 296,000	6 days	350,000 to 1,000,000	Asymptomatic	4 months	No recurrence	28

* Citrated blood; all other transfusions whole blood, direct method.

TABLE 5.—*Data Before and After Splenectomy*

	Presplenectomy Data					Postsplenectomy Data						
Case	Duration of Symptoms	Platelet Level	Bleeding Time in Minutes	Size of Spleen	Preoperative Transfusion	Duration of Low Platelet Level	Duration of Hemorrhage	Subsequent Platelet Level	Subsequent Clinical Course	Period of Observation	Number of Platelet Counts	End-Results
6	13 months intermittent, 1 week continuous	10,000 to 20,000 36 hours	10 plus	Palpable	175 cc.	25 days 10,000 to 42,000	Absent first 8 days; recurrence 9th day	.....	Bleeding 9 to 25 days	25 days	25	Chronic case; death 26th day
14	2 years intermittent, 4 days continuous	10,000 to 16,000 48 hours	15 plus	Not palpable	160 cc.	24 hours 12th hour 180,000 24th hour 640,000	Epistaxis stopped 8 hours prespelenectomy	640,000 to 2,260,000 3d month 824,000	Asymptomatic for 14 months	14 months	24	Chronic case; cure permanent
7	48 hours continuous	20,000 to 22,000 10 hours	15 plus	Not palpable	315 cc.	9½ hours 2½ hours 130,000 9½ hours 272,000	48 hours; hematuria	440,000 to 600,000 2d month 600,000	Asymptomatic for 2 months	2 months	17	Acute case; cure
15	2 weeks intermittent, 1 week continuous	32,000 to 17,000 72 hours	24	Not palpable	140 cc.	.....	.....	Complete hemostasis at operation	.....	0	4	Acute case; death following operation
3	1 month intermittent, 24 hours continuous	32,000 to 56,000 24 hours	60	Not palpable	225 cc.	.....	3 hours	.....	.....	3 hours	4	Subacute case; death; ligation of aberrant gastric vein
18	48 hours continuous	36,000 to 56,000 72 hours	15	Palpable	200 cc.	36 hours 12th hour 140,000 36th hour 336,000	Complete cessation of hemorrhage within a few hours	328,000 to 1,176,000 4th year 448,000	Asymptomatic for 4 years	4 years	62	Acute case; rapid recovery; permanent

to three and one-half years, the platelet levels varied from 10,000 to 56,000.

On clinical examinations five patients showed enlargement of the spleen; their platelet counts were 10,000, 20,000, 56,000, 64,000 and 104,000. Of these five patients, one was splenectomized without benefit and died of intracerebral hemorrhage; one recovered following splenectomy; two became asymptomatic after transfusions and one recovered without treatment. Apparently enlargement of the spleen in this series of cases was not significant in the prognosis, and the the highest counts. The platelet levels in the chronic and acute cases were practically the same. There was little difference in the number of platelets present in cases with splenomegaly and in those in which the spleen was not enlarged.

RESULTS IN THE UNTREATED CASES

Table 3 presents the records of seven cases, in six of which no treatment other than ultraviolet radiation was given. We are not attaching any favorable results to this form of therapy since our data are insufficient;

furthermore, the group is too limited to invite therapeutic conclusions even with adequate data, especially since it is well known that healing in this disease occurs spontaneously. Of the seven cases, four were acute and of a severe form; one was moderately severe of the acute type, and two were very mild of the chronic type. Of this group five have remained asymptomatic for periods varying from five months to 5 years and eight months; another case was under observation only nine weeks, but at the end of the eighth week the symptoms had subsided, and at the ninth week the platelet count was 408,000. Owing to the difficulty in finding a blood donor for patient 20, transfusion was delayed until symptoms of intracerebral hemorrhage appeared eight days after the onset of symptoms. During the four day period of observation the platelet count remained low and showed no increase three hours after transfusion and five hours before death from intracerebral hemorrhage. The fatal termination in this case might have been averted by splenectomy; retrospectively one regrets that the spleen was not removed, but patient 1, an identical case clinically, with bleeding into the skin, conjunctivae, and from the nose and mouth, was admitted with a platelet count of 4,000; yet four days later, without treatment, the platelets had increased to 368,000 and the bleeding became completely arrested.

Of particular interest are three children, patients 1, 10 and 19, who since their initial thrombocytopenic phase have remained well for twenty-six months, four years and five years and eight months, respectively (table 3). During the period subsequent to their initial observation the growth and development of these children have been normal, hemorrhagic manifestations have been entirely absent and the platelet counts, sixty-six of which were done in the four cases, were at no time below the normal level and in four of the cases were either above normal or in the uppermost limits of normal.

It is apparent that there are cases, both mild and severe, both acute and chronic, in which recovery occurs without either transfusion or splenectomy.

RESULTS FOLLOWING TRANSFUSION

The eight patients in table 4 received two transfusions. Four of this group were discharged from the hospital apparently cured, and they remained normal as long as they were under observation, four, eight, ten and fourteen months, respectively, without either clinical or hematologic relapse. Two are still in the hospital. Another became asymptomatic following a tonsillectomy after discharge from the hospital, and in the remaining case purpura was still present four months after our first observation. In this group there were no deaths.

The duration of symptoms before transfusion varied between two and one-half days and eleven months. Five were acute cases with a history of bleeding of not more than five days, and three were chronic cases with a history of having bled eleven, six and eleven months, respectively. The initial platelet count varied between 4,000 and 64,000 and in each instance was associated with prolongation of the bleeding time and delayed clot retraction.

All the patients received two transfusions of whole blood by the direct method except patient 21. The second transfusion in this instance was citrated blood. All the transfusions were in relatively small amounts, the largest being 300 cc.

The average interval between transfusion and cessation of hemorrhage was 2.7 days in four cases showing the most favorable response from transfusion. Hemorrhage subsided in each instance before the platelet count returned to normal. In the same four cases the average duration of low platelet level following transfusion before return to normal was thirteen days. Thereafter the platelet level remained above the normal level. The excessive rise in platelets following transfusion is comparable to the high platelet levels seen after splenectomy.

Patients 16 and 21 are still in the hospital. In case 16 the platelet count has increased from 10,000 to 96,000 in twenty-three days, bleeding time is two and one-half minutes, and the hemorrhagic manifestations became arrested on the fifth day following transfusion. In case 21 the bleeding persists, and the platelets are approximately the same (20,000) after a month of complete rest in addition to two transfusions.

Patient 8, with a history of hemorrhagic manifestations of eleven months' duration did not show impres-

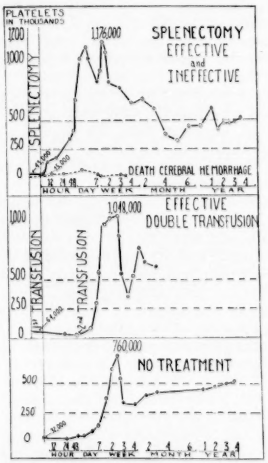

Fig. 1.—Similarity in platelet crises after splenectomy, after transfusion and without treatment. The platelet curve of an effective splenectomy is contrasted with one which was ineffective.

sive clinical or hematologic improvement after two transfusions; eight days after the first the platelet count was 74,000. This seemed a suitable case for serious consideration of splenectomy. The parents objected. Four months later a reliable observer reported that the platelets had increased to 140,000 without treatment and that the patient had only occasional cutaneous hemorrhages.

It would seem from a comparison of selected cases from the group in which transfusion was done and a group selected from those in which transfusion was not done that transfusion accelerates the tendency to arrest of hemorrhage and the return of the platelets to a normal level.

SPLENECTOMY

The spleen was removed from six patients. In general, the indication for splenectomy in these cases was excessive free bleeding from the mucous membranes.

They represent the more severe cases clinically, although they did not have the most severe thrombocytopenia (table 5). Three cases (7, 15 and 18) were acute and in their first attack when symptoms had been present forty-eight hours, two weeks and forty-eight hours, respectively. One case (3) in which symptoms had been present for one month might be classified as subacute. In two (6 and 14) symptoms had been present for thirteen months and two years, respectively. The initial platelet counts averaged 26,000 and lay within the extremes of 10,000 and 56,000. The bleeding time was markedly increased in each, and clot retraction was delayed. The spleen was palpable in only one patient, 6, whose symptoms had been present for thirteen months.

Following splenectomy, the results were favorable in three cases (14, 7 and 18). The favorable results persisted throughout the period of observation in each patient, fourteen months, two months and four years. A significant elevation of platelets followed splenectomy within twelve hours. The normal platelet levels were reached within twenty-four, nine and one-half and thirty-six hours, respectively. After reaching normal, peaks of 2,200,000, 1,170,000 and 600,000 were attained and, thereafter, the platelet levels remained in the higher ranges. Clinical improvement paralleled the platelet rise approximately. It is difficult, if not impossible, to determine the exact minute of cessation of epistaxis with packing in the nose, or hematuria or bleeding from the mouth when clotted blood is present about the sites of bleeding. The freedom from clinical symptoms was permanent throughout the periods of observation.

Death followed splenectomy in the remaining three cases (6, 15 and 3). Patient 3 died three hours after the operation and necropsy showed massive hemorrhage into the stomach and on the peritoneal side of the left diaphragm, which had resulted from the inclusion of aberrant gastric and diaphragmatic veins when the splenic vessels were ligated. Patient 15 died on the table after the completion of the operation. Hemostasis was satisfactory throughout the operation. This patient showed signs of collapse, severe prostration and increased bleeding several hours before the operation. Necropsy was not permitted and the cause of death was not determined. We feel that this patient was moribund when the splenectomy was done and that early death was probable with or without operation. It is possible that splenectomy would have been more effective had it been performed when this patient was first admitted. There were no observations on admission, either clinical or hematologic, by which, even in retrospect, one could differentiate this patient who died from others who recovered spontaneously or after transfusion or following splenectomy. Case 6 is of especial interest because of the complete failure of the splenectomy to cause platelet elevation and the persistence of bleeding from the ninth to the twenty-fifth day after the splenectomy. There was no unusual bleeding at the time of operation. The patient's clinical condition was satisfactory except for slight oozing of blood until a few hours before death, when clinical signs of intracranial hemorrhage appeared (fig. 2). The patient was not exsanguinated before death but apparently died from the cerebral accident. Here again there were no early clinical or laboratory observations, even in retrospect, which might be used to prognosticate the failure of splenectomy or the fatal intracranial hemorrhage.

The details of the platelet levels during remissions are shown in figure 1 for four cases; effective and ineffective splenectomy, following transfusion, and in one case in which no treatment was given.

THE PATHOLOGY [1]

The spleens were examined macroscopically and microscopically in seven cases. The largest spleen weighed 129 Gm. and the smallest 52 Gm. The microscopic observations showed congestion in two cases and hyperplasia of the malpighian bodies in one case. The number of platelets in the splenic sinuses varied markedly from a complete absence of platelets to the presence of large numbers of platelet masses. There were no significant diagnostic changes in these spleens.

The extrasplenic pathologic changes in three cases that came to necropsy were not informative excepting for the changes due to hemorrhage. Of particular interest was the presence of a large subarachnoid and intracerebral hemorrhage (fig. 2). Intracerebral hemorrhage was also present clinically in another case in which a postmorten encephalogram confirmed this clinical diagnosis, although actual anatomic proof is lacking, owing to a limited autopsy in which permission was not granted for examination of the head. It is worthy of emphasis that none of these patients died of exsanguination following fulminating hemorrhage.

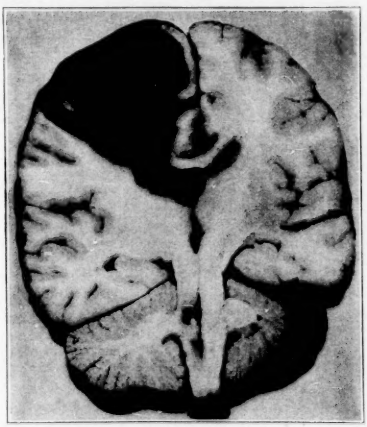

Fig. 2 (case 6, table 2).—Intracerebral hemorrhage on the twenty-fifth day after splenectomy.

The occurrence of intracranial hemorrhage in two of six fatal cases suggests that cerebral bleeding may be a frequent cause of death in hemorrhagic thrombocytopenia and perhaps the most serious hazard of the disease in early life.

SUMMARY

The clinical and hematologic data in twenty-one cases of hemorrhagic thrombocytopenia are presented.

The importance of infection is discussed.

The wide range of the platelet level and the importance of evaluating thrombocytopenia only in conjunction with clinical observations is emphasized.

A comparison is made of the results in seven untreated cases, in eight cases treated by transfusion, and in six cases treated by splenectomy.

1. We are indebted to Dr. Martha Wollstein, pathologist to the Babies Hospital, for the anatomic observations.

CONCLUSIONS

1. Hemorrhagic thrombocytopenia is frequently preceded by infection.

2. The minor fluctuations in the platelet count after it has fallen to a pathologic level are devoid of clinical significance; these fluctuations should not be used alone as criteria either of remission or of relapse, nor should these minor changes in the platelet count be used alone as indications for removal of the spleen.

3. The clinical evidences of hemorrhagic activity are the most valuable guides in prognosis and in the indications for splenectomy.

4. Spontaneous remission occurs in a large percentage of cases; transfusion frequently accelerates remission. Splenectomy causes the most rapid remission; it is not uniformly successful and is always a dangerous procedure.

5. Splenectomy should be reserved for a small group of cases: (*a*) those with fulminating uncontrollable hemorrhage; (*b*) those with chronic hemorrhage which interferes with normal growth and development or is a handicap to the well being of the patient.

17 East Seventy-First Street—Babies Hospital.

ABSTRACT OF DISCUSSION

DR. RALPH M. TYSON, Philadelphia: The etiology of thrombocytopenic purpura probably presents one of the most interesting features of the condition. The fundamental cause is not known. However, the interest centers around the chief characteristic of the condition; namely, a decrease in the platelets. Is this decrease in the platelets the result of lack of formation or is it the result of an excessive destruction? It is probably the latter, as has been shown by a number of investigators, and it more than likely is due to overactivity of the reticulo-endothelial system, mostly in the splenic portion of it. The results of splenectomy as summarized recently by Washburn and others show that it is effective in well over 50 per cent of the cases, that apparently it stops the destruction of the platelets, and that an increase in the platelets results promptly up to normal numbers. The results of transfusion are good also in certain of the cases for a few days or permanently in certain cases of milder type. The effects of transfusion probably last as long as the new platelets that are introduced into the blood stream persist. The life cycle or the life of a platelet is probably four days, as near as one can tell at the present time. If a vital stain is injected into an animal, that is, if trypan blue is used, it is taken up by and occludes the reticulo-endothelial system and immediately one gets an increase in the platelet count. In the fulminating cases, transfusion and splenectomy and all other forms of treatment almost always fail. This is probably because other portions of the reticulo-endothelium outside of the spleen continue the destructive process, the other portions being in the liver, the lungs, accessory spleens and probably the lymph nodes. Some investigators have produced an antiplatelet serum which has been injected into animals and produces a condition that simulates thrombocytopenic purpura but is less active when the spleen is removed. As a result of the rapid destruction of the platelets, protracted bleeding occurs and the bleeding time is prolonged; the blood will coagulate in about the usual time, but the clot is soft and does not retract. These conditions may be said, with a great deal of certainty, to be due to a decrease in the platelets rather than to an altered clotting mechanism. It has been shown that inadequate draining of a streptococcic infection of an accessory sinus will cause a decrease in the thrombocytes.

DR. D. C. WHARTON SMITH, Baltimore: We all remember the wave of enthusiasm when the success of splenectomy was first reported in 1916, and how subsequently a great many recurrences were noted, proving that this method was not a sure cure. I think the all important thing, as the authors brought out, is selecting the cases and I think their methods, taking everything into consideration, are most helpful. Certainly no one wants to subject a child to splenectomy when fourteen out of fifteen get well without it. To bring out a few of their points, I want to mention the case of a child whom I saw recently, who had a nosebleed of five weeks' duration. The first two weeks of this time he was treated by a nose and throat man and it was impossible to stop the hemorrhage. Then his family tried another nose and throat man, who had little success and after two or three days referred the patient to an internist. Examination showed infected tonsils with fever and swollen lymph nodes. A loud systolic murmur suggested an endocarditis. This latter was subsequently disproved. However, the bleeding continued and although the platelet count was supposed to be normal at first, from a rough smear, investigation later revealed a low count gradually dropping to 80,000, then 40,000 and finally 20,000. The hemoglobin was 35 per cent. During this time the patient had five or six transfusions but the bleeding continued. Although Dr. McLean has just stated that the platelet count is not a guide to therapy I was influenced by the steady drop to 20,000, and besides the child was still bleeding. Splenectomy was performed and the bleeding stopped as though by magic. The platelets rose to 157,000 the first day afterward, 172,000 the next day, and six weeks later the hemoglobin was 85 per cent and the platelets over 300,000.

DR. JOHN CAFFEY, New York: We have purposely not gone into the etiology of the disease at this time. The actual mechanism of the excessive bleeding and the causes of the cessation of hemorrhage are still not completely understood. Dr. Tyson has mentioned that overactivity of the reticulo-endothelial system may be the major factor. There is also considerable authoritative opinion indicating that the bleeding here may be due to depression of bone marrow activity or more specifically some lesion causing hypofunctioning of the megakaryocytes and therefore thrombocytopenia. Frequently there are phenomena after a splenectomy which seem inconsistent with overactivity of the reticulo-endothelial system as the cause of the previous hemorrhage. At first thought one might regard the improvement following transfusion as due to new and normal platelets introduced from the donor's blood. In only one case did we observe improvement immediately after transfusion. If the donor's platelets are the major factor in stopping hemorrhage one would expect hemostasis within a few hours after their introduction into the circulation of the patient. In this series the improvement was usually not apparent until four or five days after the transfusion. The deaths after splenectomy were due to a variety of causes. One of these patients was moribund before the operation. The fatal result in this instance should not be attributed to splenectomy but rather to the patient's unfavorable preoperative condition. In another case an anomaly of the veins of the diaphragm, stomach and spleen was probably the cause of death. Gastric and diaphragmatic veins were included in the ligation of splenic vessels and massive gastric and diaphragmatic hemorrhages were found at necropsy. Although this is the only instance of such a complication which we have encountered at the Babies Hospital in a considerable number of splenectomies for all causes, anomalies of the venous channels in this region are sufficiently frequent to be mentioned in anatomic textbooks and should be considered as one of the risks of removing the spleen. In a third case, death was caused by a failure of the patient to react favorably, either clinically or hematologically following the operation. Intracranial hemorrhage was the ultimate cause of death. Such cases in which the operation is wholly ineffective have been reported from a number of clinics. These failures are believed to occur when the bone marrow and megakaryocytes have been exhausted or completely destroyed. The possibility of such a result should always be mentioned in giving a prognosis for the operation.

The Industrialization of Science.—It has been repeatedly stated, and probably with considerable justification, that the application of knowledge derived through science is largely responsible for the "quantification, mechanization and standardization" which are said to characterize this country. It should be pointed out, however, that it is not the scientist but the industrialist that is principally responsible for this turn of events, and if on the one hand there is evidence of the industrialization of science there is, on the other, some effort in the direction of industrializing art.—Longcope, W. T.: Methods and Medicine, *Bull. Johns Hopkins Hosp.* **50**:4 (Jan.) 1932.

THE NEED OF MEDICAL SOCIAL SERVICE IN EYE CLINICS *

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One of the most potent agencies for the advancement of the work in eye clinics, and for the furtherance of the movement to prevent loss of vision and to control blindness, is almost unrecognized by ophthalmologists throughout the country. For that reason I venture to bring to your attention at this meeting the value of medical social service. A few of you know about it and its possibilities, many of you have heard of it and have a vague idea of its implications. That it should be appreciated, more generally known and more widely adopted is the reason I have asked for the opportunity to present this question before the Section on Ophthalmology.

Medical social service as applied to eye work was, I believe, first started at the Massachusetts Eye and Ear Infirmary in 1909, four years after the idea was originated by Richard Cabot and put into medical practice at the Massachusetts General Hospital. We have had it, therefore, for twenty-two years, and have built up a strong department. I venture the assertion that of all the developments of ophthalmologic practice as applied to hospitals which have taken place during the past twenty-five years, this is by far the most important. I believe I do not exaggerate in saying that it has increased the efficiency of the service that we give our patients by 50 per cent at the very least. How do our patients benefit by the development of new and improved apparatus, skilful examination, treatment and operation, if these advantages are not available to them? This is the handicap under which so many ophthalmologic clinics are laboring today. The patient may get the best examination by the best men in the country, the best treatment is prescribed, but does the patient follow this treatment, and does he report back as he has been asked to? In an appalling number of instances he does not; thus our time and labor are wasted, and perhaps another person with potential possibilities of blindness is at large in the community.

We may have a follow-up file, and communications may be sent to the patient to report again, without avail; we may possibly have a visiting nurse who goes to find him and impresses on him the necessity of his return to the clinic, but often some economic problem interferes which the visitor is not equipped to cope with. Too often no effort is made to get the patient back at all. A man of 45, supporting a large family, may present himself with somewhat damaged vision in the eye, due to glaucoma. Operation is advised, necessitating one month's lay-off from work, times are hard, there has been other sickness in the family. Can he do it without help? He cannot. Perhaps he will use a miotic for a time, perhaps he will come back once or twice, but more often he will do neither, and when, if ever, we see him again he may be on the verge of industrial blindness.

Many hospital patients have had a careful and time-consuming refraction. Correcting glasses are prepared and at the counter waiting, and the patients never come back for them. The wastage is great, and it is pure wastage. Every one's time is wasted, the hospital's investment is wasted, the only benefit obtained by any one is the scientific and clinical experience which the doctor may get from the case, and this is incomplete and unsatisfying, since he has the sense of nothing helpful accomplished.

The chief function of social service is, as far as possible, to eliminate this wastage of vision, labor and money, and to a very considerable extent this is possible. Only those who have given serious consideration to this question of wastage can have any idea of the extent to which it affects our hospital practice, and of how greatly it can be diminished by what has come to be known as medical social service.

The fundamental aim of this service is to make what is ordered in each case available for the patient, and only one thoroughly trained in case work, and aware of the vast network of social and charitable agencies that exist in all the large cities, is capable of handling the problem. The man of 45 previously referred to needs to be tided over for a month, until his eye is again strong enough to work. It can be done and it is done, time and again, and it is a really constructive piece of work. The problem of the pretuberculous child with phlyctenulosis and unhygienic home conditions—what is the best way to handle such a case? The doctor cannot do it. He can give suggestions and the social worker can carry them out. How are the glasses for a child with a high degree of astigmatism to be financed? This child, by the way, has been a serious problem in school; perhaps its previously undiscovered inability to see is the crucial factor in its behavior. Why hasn't that man with a corneal ulcer who refused hospitalization come back for observation? Social service will find out.

These and a thousand other problems are the routine duties of such a service. No single worker can do more than this. It takes time to develop a social service in any clinic, and until the fundamental problems are worked out and running smoothly, it is inadvisable to expand.

Much good work in preventing blindness and in conservation of eyesight has been done in this country, notably the control of ophthalmia neonatorum, the attack on trachoma, the development of the sight-saving class, and the examination of eyes in the schools. Our eye hospitals, however, have thought rather in the terms of curing disease than in those of conserving vision. Once the patient is relieved as far as possible of his present complaint, further responsibility on the part of the hospital is apt to cease, and it is in just these hospitals today that the greatest opportunity for the advancement of the conservation movement exists. As a means of demonstrating this fact, the National Society for the Prevention of Blindness was induced some three years ago to place a medical social worker in the clinic of the Massachusetts Eye and Ear Infirmary for the sole purpose of following up cases of glaucoma. Through this means alone the number of glaucoma cases on our active list rose in two years from 250 to 740, and in the same period the number of glaucoma operations doubled. Besides glaucoma the social service has worked intensively on ophthalmia neonatorum, phlyctenular disease, adult ocular tuberculosis and interstitial keratitis, and we are now taking up the question of myopia.

I would not for a moment urge that a new or undermanned social service department should branch out into intensive work in any line until its more fundamental duties are well cared for, but such intensive work

* Read before the Section on Ophthalmology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 11, 1931.

† Dr. Derby died, Dec. 12, 1931. His obituary appeared in THE JOURNAL, January 2, page 67.

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when possible to undertake will pay large dividends in visual conservation. Centers must be developed where a medical social worker can get her eye training. At present, throughout the country, there are but few eye clinics possessing an adequate social service. This question is one which should interest all hospitals with a view to preventing the present great economic waste. It should also interest all organizations which have for their purpose the prevention of blindness and the conservation of eyesight, for right in our eye clinics today will be found the most fertile field.

5 Bay State Road.

ABSTRACT OF DISCUSSION

DR. JOHN HERBERT WAITE, Boston: Nowadays, with population crowding the cities and industrial centers, and with illness of the masses attended in large clinics, the personal touch between patient and physician is largely sacrificed. Under pressure of excess of patients and the need to concentrate on the medical problems at hand, the physician often forgets that the clinic patient brings his disease to the clinic but leaves at home his psychologic problems and economic distress. And yet how important the latter problems become in the treatment of chronic illness. It was to meet these near-medical and fundamental problems that hospital social service was born. The last thirty years has seen social service take root in progressive hospitals throughout the civilized world and gradually enlarge the scope of its work. The first work was largely an attempt to prevent the abuse of free privileges in hospitals serving the poor of England. Nowadays, hospital social service attacks the social, psychologic and economic problems of illness, and thereby furnishes aid to the physician. The day of the individual worker is past, and the day of organized team work is at hand. In the healing art the team should comprise donors of funds, trustees, nurses, medical social workers, and physicians. At the Massachusetts Eye and Ear Infirmary, for several years we have followed with profit a sorting system for all new patients. In this way it has become possible to give prompt attention by physician and social worker to those patients most in need of it.

DR. HARVEY J. HOWARD, St. Louis: I have no sympathy with the attitude "that a man's eyes are his own and that he may bring them to the clinic for cure or keep them at home, as he sees fit." In fact, I think that this whole question of medical social service hinges on our agreement or disagreement with this attitude. I believe that there is no surer way to have state medicine imposed on us than for us to continue acting on this attitude. Dr. Derby cites an example of a middle aged man with glaucoma, who, through neglect, ignorance and lack of funds finally goes blind, although early in his disease he went to an eye clinic for advice and treatment. This is the type of case in which the state would be justified in requiring an official report following the first visit and demanding that a proper follow up be made: in other words, in taking the responsibility for seeing that this patient shall have the proper education, the proper treatment, and certain financial aid during his time of need. I am surprised that the state did not enact a law years ago making reportable all cases of impending blindness, the same as the state requires reporting of certain communicable diseases. With the increasing acceptance of socialistic ideas, such a function will undoubtedly, not many years hence, be required of the state, if the private agencies and the public clinics are not handling the problem satisfactorily. Since, as Dr. Derby has mentioned, there may result a great wastage of time and money in performing refractions and ordering glasses, I find it of great advantage to have the medical social worker interview many of those requiring refraction before the refraction is done in order that the patient may fully understand the implications involved. The steering of patients to various welfare agencies has been mentioned. The medical social worker is the liaison officer to connect the eye clinic service with other clinic and hospital services. A person with diabetic cataract will fail to understand why he must be examined and treated in the medical clinic or the hospital unless some one has taken the time and pains to explain the matter fully to him. This task the medical social worker is equipped to perform.

DR. G. E. DE SCHWEINITZ, Philadelphia: Dr. Derby's appeal for the more general development of medical social service in eye clinics is timely. I venture to quote some advice of my own recorded in an address delivered sixteen years ago before the National Committee for the Prevention of Blindness. The social worker who makes a calendar of glaucoma patients in any hospital, and properly follows them up, will do much, for it is through this channel that the education most readily passes to the races among which this disease is the most prevalent. Furthermore, an important function of social service is concerned with the recognition of symptoms in those who sadly need attention but who have never presented themselves for examination, not only in the house which is visited but also in the neighbor's house, and quickly the knowledge of the symptoms of any disease which demands prompt treatment filters through a crowded street. Such a disease is glaucoma, with its long prodromal periods, just the periods during which the disease can be stopped before it has produced changes that are practically irremediable. To many other ocular conditions the same plan of prevention applies. Therefore it would seem that a national committee for the prevention of blindness should control a social service as part of its equipment, whose workers should specialize in ocular diseases but who should in this respect assist in the extension of this work of the hospital physician into the life and home of the patient, and who would be attached to eye clinics and dispensaries which cannot afford the important help that comes from trained service of this character. The foundation of such a social service controlled and supported by the National Committee for the Prevention of Blindness would be welcomed by the social service organizations of this and other cities; it would possess both graduate and postgraduate possibilities and would represent another arm of the great service which is dedicated to the work of saving sight. I am sure society would realize the advantages that would spring from it, and, I trust, would support it. The activities of the Social Service of the University Hospital with respect to ocular disorders have been in operation for a good many years, to the satisfaction of all concerned. And comparatively recently we have established at the Wills Hospital of Philadelphia a social service and have sent a worker to Dr. Derby's service for special training.

DR. F. PARK LEWIS, Buffalo: There is today as never before a realization on the part of ophthalmologists that their duty is not merely to cure disease but also as far as possible to institute measures to prevent it. There are two great lines of activity in preventive work. One rests practically in disseminating knowledge among the public as to the dangers that may come from disease. This the National Society for the Prevention of Blindness carries out and has been carrying out for the last fourteen to seventeen years. It is only recently that we have begun to gain the active interest of a large number of the medical profession, and Dr. Derby in introducing the training for social service in the Massachusetts Eye and Ear Hospital is inaugurating a measure the importance of which I believe can hardly be overestimated. Five years ago a committee was appointed by the New York Academy of Medicine, of which Dr. Berens was chairman, and it made a study of this question and brought in a most amazing report in which it was found that in various clinics it was not at all uncommon for people with corneal ulcer, glaucoma and various other diseases that threaten the integrity of the eye to appear once, twice or possibly three or four times and then disappear. They probably visited other clinics; they may not have appeared at all until six, eight or ten months later they came back with destruction that was beyond repair. I therefore feel that the introduction of this social service is of such great importance that I hope it will be inaugurated in other clinics throughout the country, and I want to say that the National Society for the Prevention of Blindness gives its most hearty and cordial support.

DR. GEORGE S. DERBY, Boston: Dr. de Schweinitz's words sixteen years ago certainly were prophetic. He recognized what ought to come and what probably would come. I want to dispel Dr. Lewis's illusion that I introduced social service into the Massachusetts Eye and Ear Infirmary. I did not; but I will say I was one of the early ones to recognize the great value secured from the introduction of social service. I want to

emphasize the importance of the eye clinic in furthering the conservation of vision. I believe that patients have not been treated with the idea of visual conservation. Attempts have been made to cure their disease as the patients come to us, but the idea of actual conservation of vision of the public has not always been kept in mind.

OXYGEN THERAPY WITHOUT SODA LIME *

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In the tents in general use for the administration of oxygen, provision is made for the removal of excess carbon dioxide by circulating the atmosphere of the tent through a container filled with soda lime. In order that the soda lime may be kept active for the removal of the carbon dioxide, it must be renewed every forty-eight hours. Since 30 pounds (13.6 Kg.) of the soda lime must be replaced each time and since soda lime is expensive, this part of the care of an oxygen tent becomes not only a troublesome but a somewhat costly procedure.

During the past two years, we have treated seventy-five patients ill with lobar pneumonia in oxygen tents of either the Roth Barach or the McDonald type. When we first used these tents we noted occasionally that even though the soda lime was not changed for periods somewhat longer than the prescribed forty-eight hours the patients appeared quite comfortable. The soda lime was then left unchanged for periods of about six to eight days and still the patients made no complaint. Since after being in use for such long periods the soda lime could no longer be active in removing the carbon dioxide, the sode lime was omitted entirely and patients were kept in the tents in complete comfort without it.

A series of observations was then made to determine the carbon dioxide content in the atmosphere of tents when no provision was made for its removal by soda lime and when oxygen was supplied at a rapid rate (from 8 to 10 liters per minute). The results of these observations are recorded in table 1, in which we have summarized the high and the low carbon dioxide percentages, together with the number of observations made on each case. In two of the cases (tables 2 and 3), determinations were also made of the oxygen percentage. It will be noted that with these relatively large quantities of oxygen the proportion of carbon dioxide in the tent was readily kept down to below 1.5 per cent, in spite of the fact that no soda lime was used for its removal. The oxygen content varied between 36 and 46 per cent.

Because the most probable explanation of the low carbon dioxide percentage in the absence of soda lime was that leaks were permitting its escape, we made a series of observations in which every effort was made

TABLE 1.—*Carbon Dioxide Content of Atmosphere in Tent in Absence of Soda Lime* *

Case	Carbon Dioxide Content, Low	Carbon Dioxide Content, High	Number of Determinations
1	0.4	1.0	12
2	0.4	1.4	13
3	0.3	0.8	15
4	0.2	0.7	12
5	0.1	1.2	15
6	0.4	0.9	13
7	0.6	1.1	5
8	0.5	1.0	9
9	0.4	1.2	7
10	0.4	0.6	5
11	0.2	0.6	7
12	0.2	0.7	10
13	0.6	0.8	6
14	0.4	1.0	12
15	0.4	0.8	7

* The oxygen was administered at rates between 8 and 10 liters per minute.

TABLE 2.—*Percentage of Oxygen in Tent in Absence of Soda Lime* *

Time, Hours	Oxygen Flow, Liters per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	8	0.4	42.6
1½	8	0.8	48.8
2	8	0.6	44.8
2½	8	0.8	44.0
3½	6	0.8	36.4
4	8	0.8	39.4

* This patient received general ward nursing care. Oxygen flow at more than usual rate.

TABLE 3.—*Percentage of Oxygen in Tent in Absence of Soda Lime* *

Time, Hours	Liters per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
½	8	0.6	37.0
1	8	0.4	30.6
1½	10	0.7	39.7
2	12	0.5	38.2
2½	10	0.8	36.8
3	10	0.8	39.0
4	10	0.8	41.4
4½	10	1.0	45.2
5	10	0.8	36.6
5½	10	0.7	37.4
6	10	0.6	37.3
6½	10	1.0	40.0
7	8	0.8	....
7½	8	0.8	....

* This patient received general ward nursing care. Oxygen flow at more than usual rate.

TABLE 4.—*Observations in Which Every Effort Was Made to Prevent Leakage* *

Time, Hours	Oxygen Flow, Liters per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	3.0	56.5
1½	6	3.7	63.0
2	6	3.4	56.3
2½	6	3.2	56.0
4	6	2.6	51.0
4½	6	2.8	54.5

* The patients in tables 4, 5, 6 and 7 had a special nurse whose duty it was to prevent leakage as much as possible. Oxygen admitted, 6 liters per minute.

TABLE 5.—*Observations in Which Every Effort Was Made to Prevent Leakage*

Time, Hours	Oxygen Flow, Liters per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	1.8	51.8
1½	6	1.0	39.0
2	6	1.8	53.5
2½	6	1.6	46.8
3½	6	1.2	39.3
4	6	1.4	44.9
4½	6	1.5	44.9
5	6	0.7	32.8
5½	6	1.3	43.5
6	6	1.2	36.2

* From the Department of Medicine, New York University, and the Third (New York University) Division of Bellevue Hospital.

to prevent leakage. A special nurse was kept in constant attendance to keep the bedclothes tucked in securely about the tent, to prevent the inadvertent raising of the fabric portion by the patient and, in the general nursing care, to avoid loss of contained atmosphere as much as was possible. In this experiment, oxygen was used at the rate of 6 liters per minute, which is an average amount.

These observations are recorded in tables 4 to 7. It will be seen that, although the oxygen content of the tents rose higher than in the last experiment, so also did the proportion of carbon dioxide, which in one case rose to 3.7 per cent, in another case to 2.2 per cent, and in two cases to 1.8 per cent.

In spite of the rise of carbon dioxide, in no case did the patients complain of subjective symptoms nor were any deleterious effects noted.

Finally another series of observations was made, in which patients getting the usual ward care were kept in tents with the oxygen flow at 6 liters per minute.

TABLE 6.—*Observations in Which Every Effort Was Made to Prevent Leakage*

Time, Hours	Oxygen Flow, Liters per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	1.5	49.5
1½	6	1.7	51.4
2	6	1.8	43.2

TABLE 7.—*Observations in Which Every Effort Was Made to Prevent Leakage*

Time, Hours	Oxygen Flow, Liters per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	1.6	51.7
1½	6	0.7	36.9
2	6	0.5	30.0
2½	6	0.5	31.8
3	6	2.2	59.8
3½	6	2.2	59.0
5½	6	2.0	48.8
6	6	1.0	34.7
6½	6	2.0	47.2
7	6	1.3	36.3

TABLE 8.—*Observations With Oxygen Flow at Six Liters per Minute* *

Time, Hours	Oxygen Flow, Liters, per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	0.6	28.6
1½	6	0.3	25.5
2	6	0.2	23.4
4	6	0.4	23.3
4½	6	0.1	21.5
5	6	0.1	22.3
5½	6	0.6	27.0
6	6	0.3	24.6
6½	6	0.2	22.3
7	6	0.6	26.4

* The patients in tables 8, 9, 10 and 11 received general ward nursing care. Oxygen was admitted at the rate of 6 liters per minute. Note that whereas the carbon dioxide is relatively low the oxygen does not reach a level to be of therapeutic value.

These observations are recorded in tables 8 to 11. It will be noted that, whereas the carbon dioxide did not rise above 1.2 per cent and was for the most part below 1 per cent, the oxygen percentage of the tent atmosphere was never high enough to be of therapeutic value.

It would therefore appear highly improbable, with a patient in an oxygen tent receiving the usual amount of care available to a patient in a ward, that the proportion of oxygen in the contained atmosphere can be maintained at 40 per cent or more with a flow of 6 liters of oxygen per minute. To overcome the leakage which almost inevitably takes place, the rate of oxygen flow must be from 8 to 10 liters per minute. With this increased rate of flow the carbon dioxide does not rise over 1.5 per cent.

TABLE 9.—*Observations With Oxygen Flow at Six Liters per Minute*

Time, Hours	Oxygen Flow, Liters, per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	0.6	30.6
1½	6	0.6	29.9
2	6	0.5	28.3
2½	6	0.8	31.6
3	6	1.2	36.6
5	6	0.6	28.8
5½	6	0.5	27.6
6	6	0.8	33.2
6½	6	0.6	30.0

TABLE 10.—*Observations With Oxygen Flow at Six Liters per Minute*

Time, Hours	Oxygen Flow, Liters, per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	0.7	29.7
1½	6	0.7	27.5
3½	6	0.6	26.8
4	6	1.0	32.2
4½	6	0.5	25.6
5	6	1.2	32.3
5½	6	0.7	26.7
6	6	0.7	28.4

TABLE 11.—*Observations With Oxygen Flow at Six Liters per Minute*

Time, Hours	Oxygen Flow, Liters, per Minute	Carbon Dioxide, Percentage	Oxygen, Percentage
1	6	0.2	23.2
1½	6	0.3	23.7
2	6	0.6	28.4
2½	6	0.5	27.3
3½	6	0.7	29.0
4¼	6	0.7	26.0
4¾	6	0.5	25.6
5¼	6	0.6	26.8
6	6	0.5	25.8
6¼	6	0.3	22.6
6¾	6	0.2	22.8

The cost of additional oxygen is very small compared to the saving in the cost of the soda lime and the less exacting care required from the attendants. Another advantage is that the interruption of treatment incidental to changing the soda lime is obviated.

SUMMARY

1. With ordinary nursing care, the oxygen content of a tent cannot be maintained at a desirable level with the flow of oxygen less than 8 liters per minute.

2. With extraordinary care to prevent leakage, the oxygen content of a tent can be made to reach over 45 per cent with 6 liters per minute, but the carbon dioxide will approach 4 per cent.

3. With the flow of oxygen at from 8 to 10 liters per minute, the carbon dioxide will not rise above 1.5 per cent.

4. Patients maintained in atmospheres containing between 2 and 4 per cent carbon dioxide did not experience any subjective symptoms.

CONCLUSION

Soda lime is not necessary for the removal of carbon dioxide when large quantities of oxygen are used.

116 West Fifty-Ninth Street.

Clinical Notes, Suggestions and New Instruments

VOLUNTARY PROPULSION OF BOTH EYEBALLS

J. ALLEN SMITH, M.D., MACON, GA.

As shown in the illustrations, the patient, who has normally a slight condition of exophthalmos, is able to dislocate at will either eye separately or the two simultaneously out of the orbit. The maneuver is performed without apparent discomfort or effort, and the eyeballs return to the orbit with equal ease and control.

In looking over the medical literature available, I find that a similar case was reported, July 20, 1928, by Dr. Horacio Ferrer [1] of Havana, Cuba. Owing to its interest and rarity, I feel warranted in presenting the case.

Linton Perry, a Negro boy, aged 11 years, is from the rural section of southern Georgia. He has two sisters and one brother, all normal. His eyes have always been rather prominent. About three years ago he first noticed that he was able to perform this maneuver of propulsion of the eyeballs. At first it was necessary to place his fingers over the upper lid and exert pressure to dislodge the eyeball, but with practice this was no longer necessary. The patient appears mentally subnormal, although it should be mentioned that he is illiterate, having spent all his life in rural sections. He states that he saw an electric light for the first time only a few weeks ago.

External examination reveals a moderate exophthalmos of both eyes. Moderate photophobia is present, particularly in direct sunlight. Visual acuity without correction is: right eye, 20/30; left eye, 20/30. The visual field is normal, without any evidence of scotoma. Extrinsic muscles have normal function, and ocular movements are well performed. I might add that he states that he noticed a diplopia when he first performed this maneuver, but this was soon overcome.

The phorometer shows that he has an exophoria of 3 prism diopters at 6 meters in both eyes. Near muscle findings are normal. Screen and parallax tests for distance and near vision are normal. Accommodation is normal. The media are clear and fundi are normal, except for diminution in size and caliber of the retinal arteries. The disk appears of good color and has a well defined margin. Tension is normal in both eyes.

The propulsion is executed with unusual facility. He is able to maintain this position for several minutes without any evidence of discomfort and his visual acuity is likewise not affected. The eyeballs then return to their normal position with similar ease.

The mechanism of this act, as described by Dr. Ferrer in 1928, seems feasible and is as follows: On propulsing the eyeball forward he contracts the two oblique muscles, at the same time relaxing the four rectus muscles, which serve as retractors. When more than half the eyeball has been dislocated from its orbit, he contracts the orbicularis muscles behind the equator of the eyeballs and thus holds the eyeball in position as long as he desires. On returning the eyeball to its normal position, he relaxes first the orbicularis and then the obliques.

CONCLUSION

The case is interesting because of its rarity and because of the fact that in spite of the associated movements of the eyes in the same direction, he apparently has individual muscle control, as exhibited by the propulsion and retraction of each eye separately. However, I feel that the too frequent use of his eyes in this manner may eventually cause some serious injury to the optic nerve or to the retina.

230 Doctors Building.

1. Ferrer, Horacio: Voluntary Propulsion of Both Eyeballs, Am. J. Ophth. **11**: 883 (Nov.) 1928.

Propulsion of eyeballs by patient who has normally a slight condition of exophthalmos.

BUNDLE BRANCH BLOCK OF UNUSUAL DURATION

LOUIS FAUGERES BISHOP, M.D., AND LOUIS FAUGERES BISHOP, JR., M.D., NEW YORK

An electrocardiographic finding signifying a high degree of bundle branch block is usually considered of great importance. White states that although the prognosis is based chiefly on other evidences of heart disease it is usually a serious one, the average duration of life after its discovery being only a few years. In a critical study Willius found that of 154 patients with bundle branch block 65 per cent died of heart disease in an average of thirteen months following examination. It has frequently been stated by many authors that this graphic abnormality furnishes reliable evidence toward nonfavorable prognosis. We report here a case of bundle branch block of unusual duration, the patient being alive and well at the present time.

REPORT OF CASE

History.—F. L. I. O., aged 47, a housewife, reported for examination, Feb. 17, 1920, complaining of shortness of breath, which she had had for about a year. She also stated that eight months previously she had had an attack of abdominal pain, which had been considered by her family physician as a "gallstone" attack. The shortness of breath she particularly noticed when she hurried. Except for this complaint she felt entirely well.

The family history was entirely irrelevant, except that her father died at 57 of "Bright's disease." She had four children living and well. She gave an indefinite history of having had rheumatism and scarlet fever as a child.

Physical Examination.—The patient had a healthy appearance, weighing 135 pounds (61.2 Kg.). There was no marked sclerosis of the peripheral vessels. The only significant finding in the examination of her heart was a short systolic murmur over the sternum. The blood pressure was 200 systolic and 105 diastolic.

Laboratory Examination and Electrocardiographic Studies.—The teleroentgenogram revealed that the heart was not enlarged in relation to the size of the chest. The aorta was somewhat tortuous. The Wassermann reaction of the blood was negative.

A complete blood count and a chemical examination of the blood showed nothing remarkable. The urinalysis was negative, except for a trace of albumin and a few hyaline casts.

A diagnosis of hypertensive heart disease with right bundle branch block (old nomenclature) was made.

Subsequent Clinical Course.—This patient was observed between the years 1920 and 1931. There was little change in the amount of dyspnea which she originally complained of.

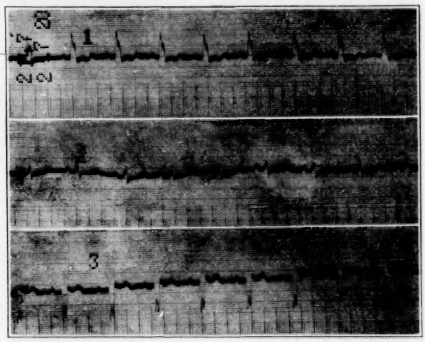

Fig. 1.—Right bundle branch block, Feb. 17, 1920: Rate 80, auricular and ventricular. Rhythm regular. P waves upright throughout—peaked in lead I, notched in lead II and III. P-R interval, 0.14 second. Q-R-S complexes occupy 0.12 second and show left axis deviation (old nomenclature) with notching of R-I downstroke and R-II upstroke. Apical ("W") notching in third derivation. T-I is diphasic with convex R-T interval. T-II is positive. T-III is positive.

There was no significant change in her blood pressure and except for a few digestive upsets caused by dietary indiscretions she has remained well up to the present time, which is more than eleven years. She has had no significant treatment for her heart, but treatment for her indigestion seemed essential for her comfort.

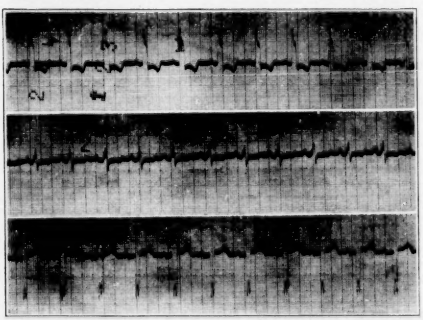

Fig. 2.—Right bundle branch block, Feb. 2, 1931: Rate 90, auricular and ventricular. Rhythm regular. P waves upright, notching in lead II. P-R interval, 0.14 second. Q-R-S complexes occupy 0.12 second and show left axis deviation with notched R-I downstroke and of upstrokes of R-II and S-III. T-I is negative. T-II and III are positive.

Electrocardiographic Studies.—On account of the fact that she had shown on her original examination a bundle branch block of high degree, she has been electrocardiographed on numerous occasions during the past eleven years. Except for some minor variations in the T waves during the observed period, the essential features of bundle branch block remained the same as at the time of the initial examination.

COMMENT

A case of hypertensive heart disease with a significant electrocardiographic finding of bundle branch block of very unusual duration is reported for the reason that one must be guarded in giving an unnecessarily fatal prognosis when such a condition is discovered.

121 East Sixtieth Street.

ABDOMINOSCROTAL HYDROCELE

S. F. HERRMANN, M.D., TACOMA, WASH.

The occurrence of hydrocele of the tunica vaginalis testis in which the major portion of the sac extends upward into the abdomen is of sufficient rarity to warrant a published report. I can find no mention of a similar condition in the American literature. A case was reported by Richards[1] in 1908 in an Egyptian. He lists a small bibliography which cites thirty-one other cases. Coleman[2] describes a case, also in an Egyptian, notable for the huge size of the sac: the fluid contents measured 27 pints. Bickle[3] of Australia, in citing a case, suggests the term abdominoscrotal as being more accurately descriptive than the more usual term bilocular hydrocele.

My patient, an American, aged 26, had noticed the presence of a right scrotal "hernia" for about five years but had never felt it necessary to do anything about it. He had never been sick and worked as clerk in a grocery store. Recently he was conscious of more weight in the scrotum. He was healthy, strong, 6 feet (183 cm.) tall and weighed 198 pounds (89.8 Kg.). When standing, the right half of the scrotum was distended by a large, firm cystic mass, and the lower abdomen appeared protuberant. When lying supine the scrotal swelling receded somewhat and the abdominal tumor was very apparent (figs. 1 and 2). The tumor mass extended well above the umbilicus. It was globular, tense and elastic. It could be displaced laterally in the abdomen. A definite fluid wave was transmitted into the abdominal portion when the scrotal tumor was compressed, and vice versa. The right testis was palpable within the scrotal mass. The left testis was in its normal position. A slight hernial impulse could be detected at the lateral edge of the mass in the inguinal region.

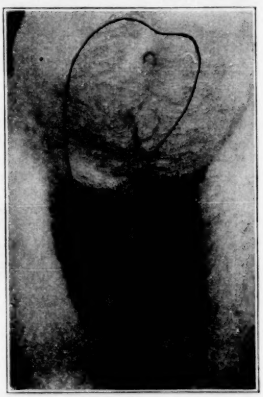

Fig. 1.—Abdominoscrotal hydrocele; patient standing erect; outline of abdominal tumor indicated by heavy line.

Operation was performed, July 15, 1931. An incision was made from the level of the right anterior superior iliac spine down to the upper portion of the scrotum. The external oblique fascia was split to open the inguinal canal. The hydrocele sac was dissected free in the scrotum. A trocar was introduced into this portion and a little more than 3 liters of yellow turbid fluid, containing cholesterol crystals, was drawn off. By reaching up into the hydrocele sac from below and catching the lining with hemostats, the intra-abdominal portion was inverted and pulled out through the inguinal ring. The testicle was large and edematous, with many superficial ulcerations and one small surface papilloma. The hydrocele sac, testicle and vas were

1. Richards, Owen: A Case of Double Abdominal Hydrocele, Lancet **2**: 533-534 (Aug. 22) 1908.
2. Coleman, R. B.: Abdominal or Bilocular Hydrocele, Brit. M. J. **2**: 629-630 (Dec. 7) 1918.
3. Bickle, L. W.: Abdominal or Bilocular (?) Hydrocele, Brit. M. J. **2**: 13 (July 5) 1919.

removed as one mass. The whole Hesselbach's triangle was now found to be involved in a large hernial sac. This sac was isolated, amputated and ligated high up by inserting two purse-string sutures. The bladder protruded into the hernial space. It was separated from the hernial sac and tucked back into place. The conjoined tendon and a portion of the rectus sheath, after mobilization, were now attached to the inguinal ligament with interrupted stitches of chromic catgut. The inguinal canal

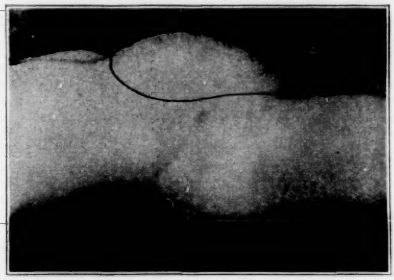

Fig. 2.—Abdominoscrotal hydrocele; patient lying supine; outline of abdominal tumor indicated by heavy line.

was obliterated. The upper portion of the external oblique aponeurosis was brought down to the inguinal ligament as a second layer, and the lower flap of this fascia was tacked up to cover these sutures. After a small Penrose drain had been placed down into the scrotum, the skin wound was closed.

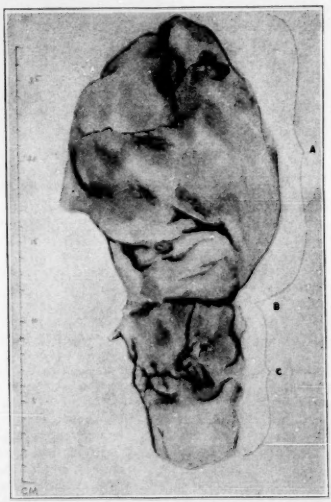

Fig. 3.—Operative specimen of collapsed abdominoscrotal hydrocele sac drawn to scale: *A*, abdominal portion; *B*, external inguinal ring; *C*, scrotal portion. When full, this sac contained 3 liters of fluid.

Figure 3 shows the entire collapsed hydrocele sac drawn to scale. A microscopic study showed the wall to be composed of dense fibrous connective tissue with mild lymphocytic infiltration and no recognizable epithelial lining.

Convalescence was uneventful.

Medical Arts Building.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REGULATIONS.

H. A. CARTER, Secretary.

REGULATIONS TO GOVERN ADVERTISING OF ULTRAVIOLET GENERATORS TO THE MEDICAL PROFESSION ONLY

Therapeutic claims in advertising matter and descriptive literature to the profession in professional publications are limited to conform to the following statements based on the best available evidence:

The evidence available, January, 1932, indicates that ultraviolet rays have a prophylactic and curative effect on rickets, infantile tetany or spasmophilia, and osteomalacia.

Prenatal irradiation of the mother, and also irradiation of the nursing mother, appear to have a definite preventive influence on rickets. This, however, requires general irradiation of the nude body; mere exposure of the head and face could not be expected to yield such a result.

Irradiation may also exert a beneficial action on other disorders of calcium metabolism, but the limits of such action, the conditions under which it may be produced, and the specific influence of the rays have not yet been fully explored and specified.

Exposure of the lesions of erysipelas and a wide area of surrounding tissue has been shown to have a favorable effect on such lesions.

The benefit derived by patients suffering from tuberculosis of the bones, articulations, peritoneum, intestine, larynx and lymph nodes when exposed to natural sunlight or to the rays emitted by certain artificial sources of radiation cannot be doubted, but the precise rôle of ultraviolet rays in such action has not been clearly determined. It is probable that visible radiation and the conditions of the atmosphere share in such action.

As far as normal persons are concerned, the claim that exposure to ultraviolet rays increases or improves the tone of the tissues or of the body as a whole, stimulates metabolism or tends to prevent colds has not been conclusively substantiated.

Among the diseases of the skin, on lupus vulgaris alone can ultraviolet rays be said to act specifically, and this only when the disease is treated strictly on the Finsen principle. In other dermatoses (scrofuloderma, erythema induratum, psoriasis, pustular folliculitis, indolent ulcers, furunculosis, acne vulgaris, angioma serpiginosum, parapsoriasis, pityriasis rosea) local or general exposure to ultraviolet radiation may have a favorable action, but the improvement that may result cannot be regarded as a specific effect of the rays. In some cutaneous disorders (eczema, psoriasis, lupus erythematosus, herpes simplex, erythema solare perstans, xeroderma pigmentosum, freckles, atrophy, keratoses, prematurely senile skin) exposure to such rays may cause an exacerbation, provoke an attack, or produce other injurious effects.

Evidence of new uses of ultraviolet rays may be brought to the attention of the profession, provided such evidence is acceptable to the Council.

REGULATIONS TO GOVERN ADVERTISING OF ULTRAVIOLET GENERATORS TO THE PUBLIC ONLY

1. In advertisements or advertising literature intended for the public, the names of diseases or of conditions in which ultraviolet radiation is supposed to be beneficial shall not be mentioned; nor may the advertiser include recommendations for the use of such lamps as curative agents, but ultraviolet generators may be advertised as useful in preventing rickets and promoting the development of sound bones and teeth.

Specifically, the claims that exposure to ultraviolet rays increases or improves the tone of the tissues or of the body as a whole, stimulates metabolism, acts as a tonic, increases

mental activity or tends to prevent colds may not be included in such advertising, because such claims have not been conclusively substantiated.

2. The Council cannot consider for inclusion in its list of accepted physical therapy devices the products of any firm that makes claims that are seriously misleading, whether in published advertisements in lay or professional magazines or journals or in pamphlets or circulars, especially if such claims tend to promote the use of products or devices inimical to the public health or to the public welfare.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

SURGICAL MAGGOTS-LEDERLE.—Fly larvae of the species Phormia regina and Lucilia sericata. Marketed in bottles containing approximately 1,000 in a medium composed of desiccated hog's liver and 1 per cent nutrient agar.

Actions and Uses.—Surgical maggots-Lederle are proposed for use in treatment of chronic osteomyelitis and other suppurative infections; it is believed that the maggots clear away devitalized tissue after operation.

Dosage.—The wound is filled with maggots, which are allowed to remain for about five days, when they are flushed out with physiological solution of sodium chloride; the wound is then swabbed and a fresh supply of maggots is implanted. The average course of treatment is for six to ten weeks, the actual number depending largely on the size of the infected area and the individual response of the patient. Apparently, a substance is generated which becomes increasingly destructive to the maggots, since they can live in the wound only a few hours after several implantations. The antagonistic reaction varies in different patients. The product is forwarded to physicians according to a schedule which is designed to insure an active product.

Manufactured by the Lederle Laboratories, Inc., Pearl River, N. Y. No U. S. patent or trademark.

Fly eggs of Phormia regina and Lucilia sericata are disinfected in 10 per cent neutral formaldehyde solution for a period of three minutes. The disinfected eggs are rinsed several times with sterile distilled water and transferred by means of sterile forceps to an autoclaved culture medium composed of desiccated hog's liver, and 1 per cent nutrient agar. The newly hatched maggots are tested for the presence of aerobes and anaerobes by inoculating duplicate sets of broth fermentation tubes and deep meat tubes. The maggots are held in the icebox at 4 C. to obtain a minimum of a forty-eight hour reading on the sterility tests before shipping. The maggots are shipped on the liver-agar medium, which provides the moisture essential for their maintenance. It has been found possible to ship the maggots under conditions that retard their growth but retain their viability.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1931, p. 383).

Cutter Laboratory, Berkeley, Calif.

Diphtheria Toxin for the Schick Test (See New and Nonofficial Remedies, 1931, p. 384).—Also marketed in packages containing sufficient material for ten tests.

LIPOIODINE-CIBA (See New and Nonofficial Remedies, 1931, p. 212).

The following dosage form has been accepted:

Tablets Lipoiodine-Ciba 0.3 Gm. Sugar Coated.

SODIUM GOLD THIOSULPHATE (See New and Nonofficial Remedies, 1931, p. 192).

Gold Sodium Thiosulphate-Searle.—A brand of sodium gold thiosulphate-N. N. R.

Manufactured by G. D. Searle & Co., Chicago, Ill. No U. S. patent or trademark.

Ampuls Gold Sodium Thiosulphate-Searle, 1 cc.: Gold sodium thiosulphate-Searle, 0.01 Gm., sodium thiosulphate, 0.15 Gm., benzyl alcohol, not more than 1.5 per cent. Each ampule contains more than 1 cc. of solution.

Ampuls Gold Sodium Thiosulphate-Searle, 2 cc.: Gold sodium thiosulphate-Searle, 0.025 Gm., sodium thiosulphate, 0.025 Gm. Each ampule contains more than 2 cc. of solution.

Ampuls Gold Sodium Thiosulphate-Searle, 5 cc.: Gold sodium thiosulphate-Searle, 0.05 Gm., sodium thiosulphate, 0.375 Gm. Each ampule contains more than 5 cc. of solution.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

W. A. PUCKNER, Secretary.

SOLUTION NORMET (II)

The Council published a report on this preparation declaring it unacceptable for New and Nonofficial Remedies because it is an unscientific mixture marketed with unwarranted claims (THE JOURNAL, Oct. 17, 1931, p. 1149). The report was mainly a criticism of claims made in the advertising for the product. The report gave a formula for the preparation taken from the *Bulletins et mémoires de la Société nationale de chirurgie* **55**:848, 1929, stating that this formula was given by M. Normet. This was inaccurate, since the article in question is a report by M. Cunéo, presented for M. Normet; however, it would appear fair to assume that much of the material of the report, including the formula statement, was supplied to M. Cunéo by Normet or by his agents.

Dr. John E. Summers, in a letter published in the November issue of the *Nebraska State Medical Journal*, objected to the Council's report on account of the error just mentioned and further stated his belief that the report was based on ignorance and avoidance of statements of corroborative facts in the article by Cunéo. Dr. Summers submitted copies of articles by Normet, Richet and by himself, dealing with Solution Normet, together with other material, including correspondence with Normet and with the High Chemical Company, the distributors of the product in this country.

The Council's referee made a digest of the material submitted by Dr. Summers and reported it to the Council. Concerning the paper of Cunéo, the referee reported that he had submitted it to a surgeon of high standing, who made the following analysis: "Report by Cunéo, read for Normet before the National Society of Surgery, June 12, 1929:

"Cunéo reports on the work of Normet, and in doing so (1) quotes Normet's results and claims, (2) includes confirmations (both experimental and clinical) for which he thus *ipso facto* assumes responsibility. It is not clear, however, that he himself either did or saw the experiments briefly referred to, while it is perfectly clear that the clinical results he reports are not his own but those of 'surgeons in his entourage.' Throughout the whole article, it is not always easy to tell when Cunéo is stating his own opinion and when he is merely quoting Normet.

"1. Experimental: Cunéo definitely states that in the Laboratory of Experimental Surgery of the Faculty of Medicine, Normet's bleeding experiments were (at the request of Normet) repeated, and Normet's results confirmed. No details are given (how many dogs? how much blood? who did the experiments? were there any controls? and so on). As scientific evidence, the testimony is therefore of no critical value beyond that which attaches to the prestige of Cunéo's name. A film is referred to, which by implication is a record of dog bleeding experiments showing remarkable recovery following injection of Normet's Solution, but it would be necessary to know by whom and under what conditions this film was made, before its value as evidence could be determined. Cunéo makes no definite statement on this point and I am unable to find, after carefully reading the article, how the film came into being.

"2. Clinical: Five cases are reported, none of them under Cunéo's personal care, but all treated by surgeons either in his own 'entourage' or serving in the Lariboisière and known to him. All the patients showed symptoms of grave hemorrhage and grave shock, and received about a liter of Normet's Solution. Very striking immediate improvement occurred, though it is perhaps questionable whether this improvement was more marked than that often seen in such cases when morphine is given and the body fluids replenished by subcutaneous or intravenous salt. However, Cunéo states it as his opinion that the results (for which, by reporting them in this way, it seems to me he assumes responsibility) confirm the experiments on dogs and the previous human observations of Normet. Injection of the solution is, however, not regarded as a substitute for transfusion, but only as a valuable ally.

"Conclusions: Although there is no reason, that I can see, why remarkable results of any kind should have been expected in the treatment of hemorrhage or shock with this mixture

of citrates, the results apparently obtained, and vouched for by Cunéo, are suggestive and should not be dismissed. If the solution has the great merit these results imply, so good a surgeon as Cunéo would certainly have immediately adopted it, used it widely and reported his results on the basis of extensive employment *in his own service*. If no such subsequent report has been made by him, the probabilities are (as so often happens) that the early promise in uncontrolled cases has not been borne out by later extensive and more carefully controlled usage."

[The referee knows of no other paper by Cunéo dealing with this solution, and this is the only paper by Cunéo mentioned in the bibliography sent by Dr. Summers, or that supplied to a physician by the High Chemical Company in November, 1931.]

The referee reported that a careful study of the literature cited afforded no evidence in support of the claims made for Normet's Solution. He found that Normet had published at least seven different formulas, including that supplied to Cunéo, and that there is no evidence to show that the formula of Solution Normet Surgical or Solution Normet Medical, now sold by the High Chemical Company, is the same as any of the seven. On the contrary, in the booklet issued by the High Chemical Company the claim is made that the actual formula of the marketed product is more efficacious than were the old formulas; the correct formula is not stated in the advertising. The product sold by the High Chemical Company is therefore a preparation of secret composition, and there is no justification for citing experiments with any of the seven formulas used as evidence for the value of Normet's Solution Surgical or Normet's Solution Medical now marketed by the High Chemical Company. The referee further reported that the evidence leads so strongly to the conclusion that Normet has lent his name to the exploitation of a secret preparation that his testimony cannot be accepted as unbiased.

The material sent by Dr. Summers was submitted to a second referee, who, after careful examination, reported hearty approval of the published report and of the referee's second report. More explicitly, the second referee reported that the advertising for Normet's Solution is full of ridiculous and extravagant claims, that the claims are based on so-called scientific evidence so sketchy as to be open to grave suspicion, and that there is practically no evidence that Normet's Solution is more effective than ordinary saline solution. The second referee considers it regrettable that Dr. Summers, having apparently accepted the statements in the French literature and being himself honestly convinced of the value of the preparation in his own practice and that of his associates, has given lectures using a film furnished by the distributors of the preparation without adequate evidence as to the authenticity of the picture, and has published observations on his use of Normet's Solution without giving adequate details or control cases. Dr. Summers' attack on the Council, this referee states, appears to be entirely unjustified.

The Council adopted the reports of both referees, voted to send copies to Dr. Summers and to the *Nebraska State Medical Journal*, and authorized publication of this summary of the two referees' reports.

INJECTABLE OVARIAN PREPARATIONS OMITTED FROM N. N. R.

In 1930 the Council omitted all desiccated ovarian preparations for oral administration, provisionally retaining those intended for intramuscular or hypodermic administration. These included an extract of the whole ovary and solutions of the water soluble extracts of the corpus luteum. The manufacturers of these products were informed that these would be omitted at the close of 1931 unless meanwhile acceptable methods of assay for hormone content were adopted and acceptable evidence for their effectiveness submitted. The interested firms have not submitted such evidence.

As to the adoption of an assay method, it was later decided on the basis of opinions expressed by the Council's consultants that our present knowledge made it undesirable to adopt assay methods for the determination of the hormone content of these water-soluble preparations and that the use of preparations containing or claimed to contain any but the follicular hormone (for which an acceptable method of assay is available) is not justified except for the purpose of controlled experimentation.

Since no acceptable evidence exists for the usefulness of such preparations, the Council voted to omit Ovarian Substance Soluble Extract-P. D. & Co., Corpora Lutea Soluble Extract-P. D. & Co., Corpus Luteum Extract-Lederle, Corpora Lutea Soluble Extract-Wilson, and Sterile Solution of Lutein-H. W. & D.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

PENNANT CRYSTAL WHITE SYRUP

(A blend of corn syrup and sucrose syrup, with vanilla flavor)

Distributor.—Union Sales Corporation, Columbus, Indiana.

Description.—A table syrup; corn syrup sweetened with sucrose; flavored with vanilla extract.

Manufacture.—The corn syrup ingredient is prepared from corn starch. Corn is steeped in 0.3 per cent sulphur dioxide water for from thirty to thirty-six hours. The softened corn is ground and the germ separated by flotation in water. The resulting material is ground and the bran separated by bolting. The resulting starch and gluten in water suspension passes over separating tables, where the gluten is separated from the starch by flotation. The starch is filtered out and washed. The starch is hydrolyzed by a dilute solution of hydrochloric acid; the hydrolysis is accelerated by heating the mixture in autoclaves under forty pounds steam pressure. Dextrose, maltose and dextrins are the chief products of the hydrolysis. The sugar liquor from the autoclaves is brought to a definite acidity with sodium carbonate. The nearly neutral solution is filtered. The filtrate is filtered through bone black and concentrated in "vacuum" pans to the desired density.

Sucrose syrup of a definite density is added to the corn syrup. The mixture is heated to 70 C., flavored with vanilla extract and automatically packed hot in air tight cans.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	24.5
Ash (principally sodium chloride)	0.3
Fat (ether extract)	0.0
Protein (N × 6.25)	0.1
Reducing sugars, as dextrose	27.9
Reducing sugars, as dextrose after acid hydrolysis	73.5
Reducing sugars, as dextrose after invertase inversion	41.1
Sucrose	12.5
Dextrins (by difference)	34.7
Titratable acidity as HCl	0.01
Sulphur dioxide as SO_2	0.001
*p*H	4.9

No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.

Calorics.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—A syrup for cooking, baking and table use. It is suitable as a carbohydrate supplement for milk modification for infant feeding.

BARKER'S THORO-BREAD SLICED OR PLAIN

Manufacturer.—Barker Baking Company, Grand Forks, N. D.

Description.—A white bread made by the sponge dough method.

Manufacture.—The sponge dough ingredients, short patent flour of northwest wheat, water, malt syrup, yeast, powdered skim milk, shortening and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, are mixed in a high speed mixer. The sponge dough

is fermented for from four to five hours, after which are added flour, water, salt and sucrose to make the completed dough, which is cut into pieces of desired weight. The pieces are fermented for a short time, molded into loaf form, panned, further fermented, baked for from thirty to thirty-five minutes, cooled, and wrapped in wax-paper.

The factory, equipment and storage rooms are kept in strictly sanitary condition.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.3
Ash	1.0
Fat (ether extract)	1.5
Protein (N × 6.25)	10.1
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	52.8

Calories.—2.7 per gram; 77 per ounce.

Claims of Manufacturer.—A bread of good quality.

PIXIE STRAINED APPLE SAUCE
With Added Sugar

Manufacturer.—Fruit Belt Preserving Company, East Williamson, N. Y.

Description.—Canned apple sauce made from sieved, peeled and cored apples containing in large measure the mineral and vitamin content of the raw fruit used; contains a small amount of added sugar.

Manufacture.—New York State, Baldwin and Greening apples are automatically peeled and cored, and are immersed for a few minutes in cold salt solution, which arrests oxidation and enzymatic action; they are inspected on conveyor belts, and bruised sections, particles of core and defects removed. The prepared apples with sugar syrup are cooked in a closed kettle, sieved, canned and processed by essentially the same procedure as that outlined for Sieved Carrots (THE JOURNAL, Nov. 14, 1931, p. 1467). The final processing involves three minutes' heating in boiling water.

Chemical Composition (submitted by manufacturer).—

Specific gravity 20 C./20 C.	1.06
	per cent
Moisture	84.7
Total solids	15.3
Ash	0.2
Fat (ether extract)	0.1
Protein (N × 6.25)	0.1
Reducing sugars as invert	6.3
Sucrose (copper reduction method)	6.6
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	14.1

Calories.—0.6 per gram; 17 per ounce.

Vitamins; Micro-Organisms; Claims of Manufacturer.—See these sections for Pixie Strained Carrots.

SMACO HYPO-ALLERGIC WHOLE MILK (300)
(Sterilized Liquid)

Manufacturer.—S. M. A. Corporation, Cleveland.

Description.—A sterilized whole milk made hypo-allergic by prolonged processing.

Manufacture.—The milk used in SMACO (300) is collected in accordance with the provisions of the sanitary code of the Cleveland Board of Health. On receipt at the dairy, the milk is pasteurized by the holding system, by which it is uniformly heated to a temperature of between 61 and 65 C. and uniformly maintained at this temperature for thirty minutes. The milk is cooled forthwith to 7 C. or less.

The pasteurized milk is homogenized by forcing under high pressure through small apertures and canned. The canned milk is processed under steam pressure for a prolonged period, after which it is immediately cooled.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	87.6
Total solids	12.4
Ash	0.7
Fat (ether extract)	3.5
Protein (N × 6.38)	3.3
Lactose (by difference)	4.7

Calories.—0.60 per cubic centimeter; 0.6 per gram; 20 per fluidounce; 17 per ounce.

Micro-Organisms.—This hypo-allergic milk is sterile according to the "Standard Methods of Bacteriological Analysis of Milk" of the laboratory section of the American Public Health Association.

Claims of Manufacturer.—This hypo-allergic milk is especially prepared for individuals subject to allergic reactions from usual boiled milk or other milk preparations. It may be used in regular feeding formulas.

PENNANT GOLDEN TABLE SYRUP
(A blend of corn syrup and refiners' syrup)

Distributor.—Union Sales Corporation, Columbus, Indiana.

Description.—A table syrup; corn syrup flavored with refiners' syrup.

Manufacture.—See this section for Pennant Crystal White Syrup (THE JOURNAL, this issue, p. 402) for the manufacture of the corn syrup ingredient. The refiners' syrup ingredient fulfils the United States Department of Agriculture standard for that product. The corn syrup with a smaller quantity of the refiners' syrup are mixed, heated to 70 C. and automatically packed in air tight cans.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture	25.0
Ash	1.0
Fat (ether extract)	0.0
Protein (N × 6.25)	0.2
Reducing sugars, as dextrose	30.8
Reducing sugars, as dextrose after acid hydrolysis	68.6
Reducing sugars, as dextrose after invertase inversion	37.7
Sucrose	6.6
Dextrins, by difference	36.4
Titratable acidity as HCl	0.04
Sulphur dioxide as SO_2	0.002
pH	5.6

No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.

Calories.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—A syrup for cooking, baking and table use. It is suitable as a carbohydrate supplement for milk modification for infant feeding.

REPORTS OF THE COMMITTEE

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

"HARDY'S BUTTER KRUST BREAD" NOT ACCEPTABLE

The Hardy's Baking Company, Flint, Mich., submitted to the Committee on Foods a white bread called "Hardy's Butter Krust Bread." This bread is prepared by the sponge dough method from short patent flour of northwest wheat, water, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, salt, dextrose, lard, sweetened condensed skim milk and a partially hydrolyzed starch.

Chemical Composition (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	36.4
Ash	1.1
Fat (direct ether extraction method)	0.8
Protein (N × 6.25)	9.6
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	51.9

Discussion of Name.—The name "Butter Krust Bread" indicates either that the baking formula contains sufficient milk-fat or butter or that the bread crust has been specially treated with butter to impart to it a distinctive and characteristic butter flavor. Butter, however, is not an ingredient of the bread; furthermore, skim-milk and not whole milk is used in the baking formula. Neither the bread nor the crust has any detectable characteristic butter flavor. The name is considered inappropriate for the bread, is misinformative and is misleading.

The manufacturer when informed of this opinion expressed himself as unwilling to change the name in accordance with the Committee's recommendations. This bread therefore cannot be listed among the Committee's accepted foods.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 30, 1932

FEDERALIZATION OF HEALTH AND HYGIENE THROUGH SHEPPARD-TOWNERISM

The Sheppard-Towner Maternity and Infancy Act became a law, Nov. 23, 1921. The act, so adroitly framed as almost wholly to preclude the possibility of a review by the United States Supreme Court, authorized the Children's Bureau in the Department of Labor to enter into agreements or compacts with such states as were willing to surrender to the federal government for monetary considerations their rights to supervise and control maternal and child hygiene. As the people of every state had to contribute their shares of the general fund through federal taxation and as they could get none of their money back unless their state governments submitted to federal domination, the scheme succeeded. That is, it provided for setting up an elaborate federal machine and for keeping it in operation. On June 30, 1929, however, the act died. Congress had killed it by express repeal.

During the seven and one-half years that the Sheppard-Towner Act was in effect, it cost the people about eleven million dollars in taxes. During that entire time it did not develop a single new idea in the field of maternal and infant hygiene. As shown by official mortality statistics, it did not accelerate the rate of decline in either the maternal or the infant death rates, by even a fraction of a point per annum. Either as an experiment in federal administration of state affairs, or as a federal experiment in maternal and infant hygiene, it was a failure. Nevertheless vigorous efforts are now being made to revive Sheppard-Townerism, to extend it to cover the entire field of hygiene for all classes of the population in all rural areas, and to make it a permanent part of our scheme of government. The demand for retrenchment in the cost of government and the desire that the federal government cease its activities in fields that belong exclusively to the states do not influence the proponents of such legislation. Even the President's[1] appeal to those who regularly importune Congress to enact measures in which they are interested, that the most patriotic duty they can perform at present is to refrain from seeking any increase in the drain on public finance, has fallen on deaf ears.

Three bills[2] have already been introduced in Congress authorizing federal subsidies under the Sheppard-Towner plan. One bill, H. R. 7525, introduced by Representative Bankhead of Alabama, has already been recommended by the Committee on Interstate and Foreign Commerce of the House of Representatives for enactment and is now on the House calendar. On another bill of similar purport, S. 572, introduced by Senator Jones of Washington, the Senate Committee on Commerce will give a hearing on February 4. Each of these bills provides for annual appropriations to enable the federal government to make to subservient states certain basic grants of money. The amounts are arbitrarily fixed by the bills. The government is to pay to each such state in addition a subsidy or dole equal to the amount that the state appropriates for the purposes of the bill. The amount of the allotted federal subsidy or dole that a state may receive for rural, maternal or child hygiene is to have no reference whatever to rural, maternal or infant death rates. Neither is it to have any relation to the financial needs of the states. However, the funds collected by taxation levied on the people of rural and urban areas alike are to be used exclusively for the benefit of the people in the rural areas, except that money for maternal and child hygiene may be spent for the benefit of mothers and children in towns and cities having not more than fifty thousand inhabitants. The combined federal and state funds are to be used for rural hygiene, or for maternal and infant hygiene, or for both, as the state elects, but only in accordance with such state-made plans as a federal board finds acceptable. From the judgment of that board there is no appeal. The board, which is to be an addition to innumerable other federal boards and commissions, is to be made up of the chief of the Children's Bureau in the Department of Labor, and the chief of the Bureau of Education in the Department of Commerce, both of whom are laymen, and one physician, the Surgeon General of the United States Public Health Service. The increased cost of the federal government proposed by each of these two acts is two million dollars for the first year, which amount is to be gradually increased until 1937, when the annual appropriations will aggregate four million two hundred and fifty thousand dollars, at which figure they will continue indefinitely.

Physicians are of course particularly interested in the possible effect on local health administration of these efforts to federalize the health administrations of our states. Will not such efforts, if successful, exaggerate health activities in rural districts, and particularly health activities for mothers and children, at the

1. Annual Budget Message of the President, Congressional Record, Dec. 9, 1931, p. 215.

2. S. 572, H. R. 4739 and H. R. 7525.

expense of health activities in urban districts and in fields other than those of maternal and infant hygiene? Will they not tend to destroy a local sense of responsibility for health activities? A considerable number of states did not appropriate for maternal and infant hygiene up to their full financial ability until after the repeal of the Sheppard-Towner Act. Apparently federal aid has a deadening effect on state initiative! As citizens, physicians are interested along with every one else in the effect of the proposed legislation in increasing the cost of government and in breaking down constitutional lines of demarcation between federal and state jurisdictions. The danger of federal intrusion into state administration was only recently forcibly pointed out by the President's National Advisory Commission on Education, when it reported:

"The apparent danger that lurks in all our more recent attempts to inject the federal government into education in the local communities is that it has not always nor even generally manifested that tender regard for local modes of management which has characterized state and county cooperations with local schools. Federal agencies frequently tend to set up modes of management highly centralist in spirit and effect, wherever they have tried to work in cooperation with state-wide agencies and local boards. Their right to approve and to reject plans submitted by the states, involving details of both administration and instruction, is not in harmony with the indigenous American spirit of local and decentralized management which has always yielded certain and good results given adequate time. It is the spirit of local self-government native to the American people which dominates most of our educational affairs in the forty-eight states. The centralist attitude, already apparent where the federal government touches education in the states, is felt to be contradictory to our normal ways of conducting educational affairs, and hence arouses popular distrust."—*Report of the National Advisory Committee on Education, on Federal Relations to Education, Part 1, Washington, 1931, pp. 19-20.*

"The matching of federal money grants, with state or local funds whether their use is for general or special educational purposes is a policy not to be favored in the field of education."—*Ibid., p. 33.*

What is true with respect to federal subsidies for educational purposes within the several states is equally true with respect to like subsidies for health activities.

The House of Delegates of the American Medical Association has twice [3] condemned federal interference through subsidies with the orderly administration of state hygiene such as is contemplated by the pending legislation. It is disruptive of local integrity in the field of health administration. It has been tried and it has failed. Insidiously it tends to bring medical activities in the states under the supervision and control of federal authorities. State, county and other medical associations and individual physicians are urged, therefore, to send letters and telegrams protesting against the enactment of the pending legislation that has been described, to their Senators and Representatives in Washington. They should be urged to protest against such legislation to the committees before which it is pending and to speak and vote against it when it comes to the Senate or to the House for action.

3. Proceedings, House of Delegates, American Medical Association, May, 1922, p. 38; June, 1930, pp. 35, 40, 41.

ABORTIVE POLIOMYELITIS

Since Wickmann first assumed the existence of an abortive form of poliomyelitis, the impression has become general that much, if not all, of the adult immunity to this infection is due to mass immunization of growing children by unrecognized subclinical attacks of the disease. Doubt as to the validity of this conclusion is implied in the current epidemiologic studies by Drs. Kramer and Aycock [1] of Harvard University Medical School. While the Harvard investigators have not yet abandoned the conventional assumption that adult resistance to poliomyelitis is due to childhood contact with this specific virus, they seem to have been forced to the conclusion that effective contact with the immunizing virus does not take place at the time of epidemics. Apparently the immunization is a more or less continuous process extending throughout the year, or perhaps even limited to interepidemic periods. Their data, however, are equally consistent with the recent radical European theory that the adult immunity is not so much due to specific contact with the infectious agent as to a nonspecific "serologic ripening" or "physiologic maturation" roughly synchronous with the development of sexual maturity.[2]

A favorable opportunity for the study of abortive poliomyelitis was furnished about a year ago by a local outbreak of infantile paralysis in Bedford, Mass. (population, 1,700). With the appearance of the first case the Boston investigators established residence in this suburb, where they remained for six weeks, made a house to house canvass and collected data from all mild illnesses dating from not more than two weeks preceding the first paralytic case. Approximately fifty such mild illnesses were studied. These illnesses usually consisted of unexplained headache, fever and vomiting, lasting from twenty-four to forty-eight hours. Thirty-three of these cases occurred among school children under 15 years of age, all cases of frank poliomyelitis developing in the same school.

About five months after this initial social survey, at which time any immunity resulting from the apparent abortive attacks logically would have developed, serums were drawn from about half of these school children, the pupils being selected to include every age group. As controls, serums were drawn from twenty-eight local children of the same ages who had not exhibited recognizable illness at or before the time of the epidemic and from twenty-nine children from a neighboring city which was free from poliomyelitis and had remained so. Neutralization tests were made with the seventy-seven resulting serums. Within the limits of experimental error, the results were identical with the serums of the three groups. With the apparent abortive cases, 40 per cent of the serums neutralized poliomyelitis virus in vitro. In the two control groups 44.8 and 46.4 per

1. Kramer, S. D., and Aycock, W. L.: Proc. Soc. Exper. Biol. & Med. **29**: 98 (Oct.) 1931.
2. Automatic Environmental Vaccination, Current Comment, J. A. M. A. **96**: 866 (March 14) 1931.

cent, respectively, were demonstrably virucidal. A 41.9 per cent neutralization by serums of the same age groups was the average normal as determined by previous surveys.

Assuming that this neutralization in vitro is a dependable quantitative measure of individual specific immunity, the Harvard investigators were forced to the conclusion that "the widespread immunization of a population does not take place entirely at the time of an outbreak, but rather in a more or less uniform manner throughout the year, or in interepidemic periods." They do not draw the conclusion that this apparent continuous immunization is necessarily specific or that it is necessarily due to individual contact with the specific virus. They leave the questions of the specificity and genesis of the immunity open to further investigation. Of course, if future research should show that the virucidal power of serum is not a quantitative measure of individual resistance to poliomyelitis, their argument is invalid.

EXERCISE AND COLONIC MOTILITY

Modern physiology has been largely devoted to the attempted verification of a variety of inherited or traditional beliefs and dicta that have become incorporated into its teachings. Empiric judgments are often demonstrated to be trustworthy when they are investigated by the methods of objective experiment. With the progress of science, some of the illusions or unjustified assumptions of our predecessors are gradually being dispelled. The day of hypotheses has by no means vanished; but physicians have little patience with a new idea that does not have experimental evidence in its favor. As one student of medical history expressed it, the modern physician does not rely on a philosophical system.

One of the current beliefs is that constipation as it is known in present-day medical practice is in many or perhaps most instances a result of changed conditions of living and habits of eating. An unequivocal expression of this assumption is found in a popular guide in these words: Lack of vigorous outdoor exercise, insufficient intake of water, the eating of soft cooked foods, a concentrated meat diet as well as lack of cellulose or waste material in the diet, and neglect of the bowel function are the chief causes of constipation. In most cases, therefore, it is a preventable condition, and there are few in which benefit will not result from proper diet and exercise.[1]

If the "sedentary life" is actually responsible for the conditions referred to it should be possible to demonstrate some effect of physical exercise on bowel movement. Indeed, it is surprising that a subject of such immediate importance should not have received more attention than it has from gastro-intestinal physiologists. Recent studies by Steinhaus[2] and his associates at the Young Men's Christian Association College Laboratory for Physiologic Research in Physical Education, Chicago, are not without interest in relation to man, though the researches were conducted on laboratory species. By appropriate surgical devices, Steinhaus was able to explore the motility of the colon under a variety of conditions. During an exercise period there is in a majority of cases a definite rise in colonic tone and motility. From studies following a variety of denervation procedures it is concluded that the appearance of this rise depends on the intactness of at least one of two parasympathetic inflows; namely, either the pelvic nerve (nervus erigens) from below or fibers, probably vagal, entering the colon over the ileocecal juncture from above. Some writers have attributed the beneficial effects of exercise to the massaging action of the exercise movements. This explanation has been ruled out by the Chicago experiments. Exercise metabolites, hormones, or changes in body temperature as possible causes of the "exercise rise" must also be excluded. Mass movements of the human colon occur several times daily. They may be brought on, as Hertz and Newton[3] pointed out long ago, by eating a small meal. This is the well known gastrocolic reflex. In some instances defecation attends such mass movements. The Chicago physiologists believe that the exercise rise observed by them and often accompanied by defecation is in nature similar to these mass movements observed in man.

1. Fisher, Irving: and Fisk, E. L.: How to Live, ed. 18, New York, Funk & Wagnalls Company, 1925.

2. DeYoung, V. R.; Rice, H. A., and Steinhaus, A. H.: Studies in the Physiology of Exercise: VII. The Modification of Colonic Motility Induced by Exercise and Some Indications for a Nervous Mechanism, Am. J. Physiol. **99**: 52 (Dec.) 1931.

3. Hertz, A. F., and Newton, A.: J. Physiol. **47**: 37, 1913.

Current Comment

THALLIUM POISONING

THE JOURNAL has commented previously on the dangers of poisoning by thallium, a substance related to lead. Its use as a rodent poison originated in Germany about 1920 when a German company introduced a proprietary rat poison that had thallium as its toxic principle. Later the remedy was introduced as a depilatory to be applied either locally as a cream or to be taken internally. The introduction of the remedy for this purpose resulted promptly in many cases of fatal poisoning among children. During the past year or so medical literature has contained reports of severe poisoning following the use of a proprietary depilatory cream called Koremlu, which had for its active ingredient thallium acetate. The Bureau of Investigation of the American Medical Association has accumulated many additional cases of reputed poisonings due to this product. In its action, thallium seems definitely to select nervous tissue. In rats it produces slight degenerative changes in the brain. Newspapers report this week the death of at least four children and the poisoning of two other children and five adults from eating

grain to which thallium chloride had been added, presumably for use as a rodent poison. In a medicolegal case in Vienna a woman began to poison her husband by adding to his food a rat poison containing thallium sulphate. When he was deprived of food brought from outside the hospital in which he was being treated, he began to improve. Following discharge from the hospital he rapidly became worse and returned one week later in such a bad condition that he died promptly. He had received 30 Gm. of thallium sulphate at intervals of about three months. Haberda [1] reports that the administration of thallium removes calcium from the bones and produces disturbances of growth, testicular atrophy, changes in the lining of the stomach and serious effects on the nervous system. There is apparently no known certain antidote to the action of thallium. It is a cumulative poison of high toxicity, without taste, smell or other warning properties. Its general use as a rat poison should be forbidden and its use among highly resistant species of rodents should be entrusted only to people who understand its dangerous qualities and who will exercise care in handling it.[2] Presumably the question of dangerous drugs and their control is one requiring not only more state but also some federal legislation.

THE ACTIVE COMPONENT OF INSULIN

The success that has attended the chemical investigation of a number of so-called hormones, substances exhibiting potent and physiologically important effects in the body, has raised the hopes of those who expect the synthetic chemist to make the physician independent of natural sources for the active substances that he is accustomed to prescribe. Epinephrine and thyroxine, representing products of the suprarenal medulla and the thyroid, respectively, have been studied to the point of successful synthesis by the organic chemist. The crystallization of a highly active insulin with a potency of 24 standard "units" per milligram of substance has encouraged further investigation of what at length seems to be a highly purified product. The outlook is not enhanced, however, by the growing conviction that crystalline insulin is closely related to proteins, as was pointed out recently.[1] It has been remarked [2] that the three mileposts on the road of progress in the understanding of insulin are the discovery of the endocrine function of the pancreas by Minkowski and von Mering, the isolation of potent products by Banting and Best, and the crystallization of insulin by Abel. His crystals have a high content of sulphur (3.2 per cent), are devoid of the tryptophan group so characteristic of most proteins, and like most of the latter readily yield ammonia on treatment with alkalis. According to the studies by Freudenberg and his co-workers at Heidelberg, however, the crystals lack that modern characteristic of true crystallization, the x-ray pattern. Freudenberg believes that the property of lowering the concentration of sugar in the blood is attributable to a constituent group or radical, possibly of a peptide nature, that may vary in its location in the molecular complexes of different preparations. He speculates that insulin may be a mixture of similar protein complexes of varying molecular size into which the reactive group is incorporated. Such mixtures will not always yield a purely crystalline product; nor can the potent component be separated with the readiness that the pigmentary group can be isolated from hemoglobin, leaving an uncolored protein residue. Freudenberg believes that the active group in the large crystalline insulin molecule comprises not more than 3 per cent of the total. The probability of successful synthesis seems to be put far away by such speculations.

1. Haberda, A.: Beitr. z. gerichtl. Med. **7**: 1, 1928.
2. Munch, J. C.: The Pharmacology of Thallium and Its Use in Rodent Control, Technical Bulletin 238, U. S. Dept. Agriculture, April, 1931.

1. Insulin—A Protein, editorial, J. A. M. A. **97**: 1803 (Dec. 12) 1931.
2. Kuhn, Werner; Eyer, Hermann; and Freudenberg, Karl: Das optische Verhalten des Insulins und seiner Derivate: 6. Mitteilung über Insulin, Ztschr. f. physiol. Chem. **202**: 97 (Nov.) 1931. Dirscherl, W.: Untersuchung der Einheitlichkeit von Insulinpräparaten: 7. Mitteilung über Insulin, ibid., p. 116. Freudenberg, Karl; Dirscherl, W., and Eyer, Hermann: Beiträge zur Chemie des Insulins: 8. Mitteilung über Insulin, ibid., p. 128. Freudenberg, Karl; Dirscherl, W.; Eichel, Hermann; and Weiss, E.: Die Einwirkung proteolytischer Fermente auf Insulin — Vergleich von Hydrolyse und Zerstörung der Wirksamkeit: 9. Mitteilung über Insulin, ibid., p. 159. Freudenberg, Karl; and Dirscherl, W.: Insulin, 10. Mitteilung über Insulin, ibid., p. 192.

MEDICAL ANNALS OF THE DISTRICT OF COLUMBIA

The physicians of the District of Columbia have in the past been represented by various medical periodicals. The record of their work began with a volume of transactions annually. The society was associated at various times with independent periodicals and was represented for almost a score of years by its own publications. Since 1924 the society has had a monthly bulletin. With 1932 it provides a new periodical, *Medical Annals of the District of Columbia,* to be edited by Drs. C. B. Conklin and W. M. Yater. The contents are well organized, the material is excellently edited, and the composition and typography are well-nigh faultless. Moreover, the periodical joins the Cooperative Medical Advertising Bureau. The advertisements of pharmaceuticals and other medical accessories are limited to products that qualify with the various councils of the American Medical Association. It is pleasant to welcome such a fine baby to the family of state medical journals.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday, Wednesday and Friday, from 2:25 to 2:30 p. m., over Station WBBM (770 kilocycles, or 389.4 meters) of the Columbia Broadcasting System.

The program for the week is as follows:

February 1. The Six Year Molars.
February 3. Leisure and Health.
February 5. Pneumonia — A Preventable Disease.

There is also a fifteen minute health talk broadcast over Station WBBM, Chicago, on Saturday morning, from 11:15 to 11:30.

The program for the week is as follows:

February 6. Baby Teeth.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Annual Registration of Physicians.—At the last session of the Alaska legislature an act was passed providing for annual registration of physicians with the payment of a $10 occupation tax. If the tax is not paid within three months, the secretary of the territorial medical board is to notify the licensee that he is in default. If he fails to pay the tax within three months after notice has been served on him, the board of medical examiners is instructed to revoke his license. In the opinion of the board, this new law may remedy a serious defect in the licensure situation in the territory. Before the establishment of the territorial medical board, any person possessing any kind of diploma could obtain a license to practice medicine by having the diploma recorded in the offices of any of the clerks of the district courts. It has been found that many licenses were issued on diplomas from irregular and fraudulent medical schools. Several cases have come to light in which licenses have been used by persons other than those to whom the licenses were issued. Through the cancellation of all licenses not renewed as required by the act, it is hoped to eliminate many of these questionable licenses, according to the board.

ARIZONA

Sirens on Ambulances Prohibited.—An ordinance unanimously adopted by the city commission, January 13, prohibits the use of sirens or other devices than standard horns on ambulances operating in Phoenix. According to a newspaper report, this action was taken at the suggestion of the Maricopa County Medical Society, which recently expressed to the commission disfavor of the then existing methods of operating ambulances in Phoenix. It was further stated that in the future, under the provisions of the anti-siren act, ambulances will be required to observe the traffic rules and regulations, such as boulevard stops and traffic signal lights, in the same way as all other vehicles.

CALIFORNIA

Reappointments to State Board.—On January 15, Gov. James Rolph reappointed Dr. Percy T. Phillips, Santa Cruz, and Dr. Charles B. Pinkham, San Francisco, as members of the California Board of Medical Examiners for a term of four years, ending Jan. 15, 1936. Dr. Pinkham has served continuously since Jan. 30, 1913, and Dr. Phillips since 1915. Both have received their appointments from five successive California governors.

Ten Cases of Psittacosis Reported.—Ten cases of parrot fever with one death in California have been reported to the U. S. Public Health Service at Washington, D. C. The fatal case was that of a U. S. customs inspector at San Pedro, port of Los Angeles. It was reported that the inspector in the course of his duties handled three shipments of birds during December, 1931. He is reported to have taken two parrakeets and two rice birds home. The inspector died, January 11, with symptoms of psittacosis. According to the state department of health, two outbreaks of psittacosis occurred during December in Nevada and Merced counties. In Nevada County, a traveling bird van appeared in the community, Nov. 18-20, 1931. One family purchased a pair of parrakeets, November 20. One of these birds became sick and died about December 2. Two guests of the family became ill, December 3, and two members of the family became ill, December 5 and 14, respectively. All of these persons presented symptoms typical of psittacosis and all of them died. A young adult who cared for one of these patients was suffering from a mild case of the disease at the time of the report. In Merced County, two parrakeets were purchased by a family the last of November. One bird died, December 25, and the other, two days later. At the time of the report of the state board, the mother of this family was ill. These birds were also purchased from a traveling bird vender.

DISTRICT OF COLUMBIA

Kober Memorial Exercises.—The Medical Society of the District of Columbia held memorial exercises, January 13, in memory of Dr. George Martin Kober, a former president of the society and for many years dean of the Georgetown University School of Medicine. Dr. Kober died, April 24, 1931. Addresses were made by Dr. Henry C. Macatee for the medical society; Rev. W. Coleman Nevils, S.J., for Georgetown University; Mrs. Ernest R. Grant, for the Washington Tuberculosis Association; Surg. Gen. Robert U. Patterson, for the medical corps, U. S. Army; Mr. George S. Wilson, for the board of public welfare of the District; Dr. Aleš Hrdlička, for the Anthropological Society of Washington. Dr. Arthur C. Christie, president of the society, was chairman of the meeting, which was open to the public.

ILLINOIS

Society News.—At the meeting of the Morgan County Medical Society, January 14, Drs. George L. Drennan spoke on "Reasons for Pelvic Measurements" and David W. Reid, "A Summary of Thirty Years' Obstetrical Work in Jacksonville."——Dr. William W. Duke, Kansas City, Mo., held a diagnostic clinic for cases of allergy before the McLean Medical Society, January 12, and spoke on "The Dawn of a New Specialty in Medicine."——At the first quarterly meeting of the Illinois Radiological Society in Bloomington, January 24, Drs. Edward L. Jenkinson spoke on "X-Ray Treatment of Thyroid Disease"; Robert A. Arens, "Primary Gallbladder Films Versus Cholecystography," and Isador S. Trostler, Chicago, "Historical Data Regarding the Roentgen Rays."——"Therapeutics in Private Sanatoria for Mental Cases" was the general topic for discussion at the meeting of the Illinois Society for Mental Hygiene, Chicago, January 29; the speakers were Drs. John M. Grimes, Chicago, Albert H. Dollear, Jacksonville, Henry J. Gahagan, Chicago, James M. Robbins, Kenilworth, and George W. Mitchell, Peoria.——Dr. Charles E. Humiston, Chicago, addressed the Elgin Physicians' Club and the Elgin Kiwanis Club, January 26, on "Science and Superstition."——The Perry County Medical Society, Duquoin, will be addressed, February 4, by Dr. John R. Ballinger, Chicago, on "Medicolegal Aspects of Medicine."——At a joint meeting of the Fulton, Schuyler and McDonough county medical societies, January 28, Dr. Walter H. Nadler, Chicago, spoke on diabetes.

Chicago

Society News.—The Chicago Urological Society was addressed, January 27, by Drs. Irvin S. Koll on "Symptomatic Nephroptosis Requiring Surgical Treatment"; Budd C. Corbus, "Newer Ideas in Immunology," and Charles M. McKenna and Eric Oldberg, "Bilateral Chordotomy for Relief of Pain in Carcinoma of the Bladder."——Drs. Richard H. Jaffe and Charles B. Younger will address the Chicago Laryngological and Otological Society, February 1, on "Leukemic Changes in Diseases of the Upper Respiratory Tract and Ear" and "Acute Head Colds," respectively; most of the meeting will be devoted to clinical case presentations.——A symposium on vivisection was held, January 21, under the auspices of the public health and legislative committees of the Chicago Woman's Aid; the speakers and their subjects were Drs. Margaret M. H. Kunde, "The War Against Human Pain and Suffering"; Andrew C. Ivy, "Biological Explorations in the Land of Life," and Morris Fishbein, "The Anti-Type of Mind."

W. H. H. Miller Goes to Jail.—The Chicago *Tribune* states that the appellate court ruled, January 20, that W. H. H. Miller, former director of the state department of registration and education, must serve seven months in the county jail and pay the $2,000 fine imposed by a jury which found him guilty, Dec. 10, 1929, of conspiracy to sell medical and dental licenses to persons not qualified to practice. Miller was arrested, January 22, in Champaign, Ill., and brought to Chicago, January 24. Officials had been unable to locate Miller for more than a year, it was reported. He was at liberty without bond, having failed to post a bond for his appeal, and officials neglected to commit him to jail pending its schedule. In 1923, Miller was convicted of conspiracy to license pharmacists, at which time he paid a fine of $1,000 (THE JOURNAL, Dec. 14, 1929, p. 1894). The governor then demanded his resignation. Others said to have been under indictment in the Illinois diploma mill investigation, in 1929, are Harry Goldstein, alias Senator Browsky, Springfield; Dr. Robert Lentine of Springfield; "Dr." Morris Kalmus, a New York dentist; Albert K. Barron and Jacob Crane, the latter the printer who is said to have made the fake licenses. Mitchell Blaine, who was convicted of a charge similar to that of Miller's, according to the *Tribune*, pleaded guilty and served his sentence.

IOWA

Personal.—Dr. Donald E. Camp has been appointed deputy commissioner of the Iowa State Department of Health, succeeding Dr. Joseph H. Kinnaman, resigned.——The Buchanan County Medical Society devoted its December, 1931, meeting to a special program in honor of Dr. Amos G. Shellito, Inde-

pendence, who recently completed fifty years in the practice of medicine.

Society News.—A lung and heart clinic was conducted at Manchester, Dec. 17, 1931, by Drs. John H. Peck, Des Moines, and William M. Spear, Oakdale, and Benjamin F. Wolverton, Cedar Rapids, respectively.——At the semiannual meeting of the Northwest Iowa Medical Association in December, 1931, Dr. Leslie G. Hill, Estherville, spoke on "Diagnosis and Treatment of Iritis."——At the meeting of the Lee County Medical Society, Dec. 29, 1931, the speakers included Drs. Arthur E. Hertzler, Halstead, Kan., on "Cause of Upper Right Abdominal Pain"; Charles C. Conover, Kansas City, Mo., "Venous Supply of the Cardiac Muscles"; Sam E. Roberts, Kansas City, "Bronchoscopic Treatment of Nonallergic Asthma"; Jabez N. Jackson, Kansas City, "Essentials in Surgical Technic for Cancer of the Female Breast," and Ralph R. Wilson, Kansas City, "Treatment of Postpartum Pelvic Infection."—— Dr. Charles N. McBryde, Ames, addressed a joint meeting of the Boone and Story county medical societies recently on vaccination; Dr. Albert I. Haugen, Ames, spoke on "Influence of Cardiovascular Conditions in Surgery."—— The Hardin County Medical Society was host to the Marshall County Medical Society at dinner recently; Dr. Ralph E. Keyser, Marshalltown, among others, spoke on "Common Injuries to the Knee Joint, Their Diagnosis and Management."

KENTUCKY

Bills Introduced.—H. 158 proposes to authorize the establishment and maintenance at each of the state hospitals for the insane a training course for attendants. H. 39 proposes to make it the duty of county health officers to visit the penal and charitable institutions in their districts and to make such inspection as may be necessary to protect the inmates and the public from communicable diseases and if any of the inmates of such institutions are sick or injured, to treat them.

MARYLAND

Diphtheria Toxoid Adopted.—The Baltimore City Health Department has adopted toxoid for use in preschool diphtheria immunization clinics in preference to toxin-antitoxin. Its adoption followed a year's trial in half of the clinics. Toxin-antitoxin was used in the other half. Toxoid proved to be more effective and less likely to produce reactions. Toxin-antitoxin is still being used in approximately half of the school immunization work, pending the result of a trial of the two diphtheria preventives among school children.

Pitts in Jail.—Everett E. Pitts is now serving a six months sentence in the Baltimore City Jail for practicing medicine without a license, according to information received from the Medical Service of the Supreme Bench of Baltimore. Pitts received a short sentence in the same court last year for a similar offense. The records of Maryland show that he was never licensed in the state. Pitts practiced medicine in Jennings, Fla., from 1926 to 1929. During two years of this time he was the medical officer of the town. According to information received from the state board of medical examiners of Florida, Pitts was never licensed to practice in Florida. He is said to be 33 years of age. He was born in Baltimore. The American Medical Association has no record of this person.

Laënnec's Writings Presented to Johns Hopkins.—The Henry Barton Jacobs Collection of medical books, prints, medals and autograph letters was formally presented to the Institute of the History of Medicine, Johns Hopkins University, January 14, by Dr. Henry Barton Jacobs. What is believed to be the world's only complete collection of the writings of René-Théophile-Hyacinthe Laënnec (1781-1826) is included in the gift. Included in the Jacobs group also are complete collections in all editions and all Western languages of the writings of Edward Jenner (1749-1823), Louis Pasteur (1822-1895) and Sir William Osler (1849-1919). The collection consists of 5,000 volumes, about 2,500 medical prints, 500 medical medals and about 300 autograph medical letters and manuscripts. Stained glass windows commemorating Laënnec, Jenner, Pasteur and Osler have been placed in the room which Dr. Jacobs has equipped on the institute floor of the library for housing the collection as a unit. Dates, medical symbols and works associated with the men they commemorate are worked into the design of the windows. The collection was accepted on behalf of the university by Mr. Daniel Willard, president of the board of trustees; President Joseph S. Ames presided. The speakers included Dr. William H. Welch, Baltimore; Dr. Harvey Cushing, Boston; Col. Fielding H. Garrison and Dr. Jacobs, Baltimore. Dr. Jacobs has recently been elected president of the Friends of the Johns Hopkins University Library.

MASSACHUSETTS

Will Provides for Surgical Research Laboratory.—One million dollars has been bequeathed to Boston City Hospital by the will of the late Charles H. Tyler, who died, Dec. 4, 1931, for the establishment and maintenance of a laboratory for surgical research. The laboratory is to be named for Dr. George G. Sears, emeritus professor of clinical medicine at Harvard Medical School, who is a trustee of the hospital.

Dr. Webster Gives Cutter Lecture.—Dr. Leslie T. Webster of the Rockefeller Institute for Medical Research, New York, gave the annual Cutter lecture on preventive medicine, January 26, on "Experimental Pathology." These lectures are given under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine, and that they should be delivered in Boston and be free to the medical profession and the press.

Bills Introduced.—S. 201 proposes that no person shall be required to submit to any form of vaccination or inoculation as a condition precedent to admission to any school or public institution, or to the exercise of any right, performance of any duty, or enjoyment of any privilege. H. 226 proposes to create a separate board of registration of chiropractors and to regulate the practice of chiropractic, defined as "the science or practice of locating and adjusting by hand the malpositions of the articulations of the human spine. No practitioner of chiropractic . . . shall, unless registered as a physician or surgeon . . . practice obstetrics, or administer drugs or perform surgical operations by the use of instruments." S. 132 proposes to prohibit all experiments and operations on living dogs for any purpose other than healing or curing of such dogs. H. 538 proposes (1) to require the consent of a patient before a physician may remove any organ of the body, and after removal to require the physician to explain in writing to the patient the necessity for such removal; (2) to require a physician, to be designated by the proper authorities of any hospital where an operation involving the removal of a limb or organ has been performed, to take charge of the limb or organ removed and to preserve it until it is known whether or not the patient or his relatives wish to view it, and (3) to prohibit a physician from tearing or cutting by hand or instrument any part of a patient's body, or inserting instruments into any part of the patient's body whereby his rights as a free and sane individual are violated, without first obtaining the patient's permission or the permission of his parents or guardian, if he is a minor. H. 371 proposes that any person arrested and charged with operating a motor vehicle while under the influence of liquor or narcotics may, on his request, be examined at his own expense immediately after his arrest by a physician selected by him. S. 90, to amend the law regulating the practice of chiropody, proposes to allow applicants for licenses to practice chiropody, who were practicing in the commonwealth for two years or more prior to April 24, 1917, to receive licenses without examination. H. 617 proposes to establish a board of automobile personal injury medical examiners, who are to examine all persons claiming to have sustained injuries from automobile accidents. If this bill is enacted, no suit for damages for injuries sustained in automobile accidents can be brought unless the claimant has been examined by the proposed board. H. 539 proposes to prohibit the sale of patent or proprietary medicines, containing more than 6 per cent alcohol, except on the prescriptions of a registered physician.

MISSISSIPPI

Bill Introduced.—S. 26, to amend the law making information acquired by a physician in attending a patient privileged, proposes that no privileged communication shall be deemed to have been waived by the patient unless the patient expressly waives the privilege at the time of trial.

MISSOURI

Dr. Miller Delivered Hodgen Lecture.—Dr. C. Jeff Miller, professor of gynecology, Tulane University of Louisiana School of Medicine, New Orleans, gave the tenth annual Hodgen Lecture, January 12, in St. Louis, on "A Clinical Consideration of Hysterectomy with a Brief Note on Some Points of Technic." The Hodgen lectures are given under the auspices of the St. Louis Surgical Society and the Medical Fund Society in commemoration of Dr. John T. Hodgen, who was professor of surgery in St. Louis Medical College from 1865 until he died, in 1882.

Society News.—The Kansas City Southwest Clinical Society was addressed, January 12, by Dr. William S. Middleton, Madison, on "Treatment of Pneumonia."——Dr. Richard L. Sutton,

Kansas City, addressed the Randolph-Monroe County Medical Society at Moberly, Dec. 8, 1931, on "The Long Trek," a travel lecture.——The St. Louis Medical Society was addressed, Dec. 22, 1931, by Drs. George T. Palmer, Springfield, Ill., and Jonas Curtis Lyter on "Original Diagnoses in Two Thousand Cases of Pulmonary Tuberculosis" and "The Question of Bronchial Asthma," respectively.——Drs. James H. Danglade and Edward H. Hashinger, Kansas City, presented clinical cases on syphilitic aortitis with and without aneurysm before the Jackson County Medical Society, January 12; Dr. Harry R. Wahl, Kansas City, presented pathologic specimens of syphilitic aortitis, and Dr. William S. Middleton, Madison, Wis., addressed the meeting on that subject. Dr. Donald R. Black, Kansas City, among others, addressed the society, January 26, on "Diagnosis and Treatment of Peripheral Vascular Disease."——Dr. James R. McCord, Atlanta, Ga., addressed the Kansas City Academy of Medicine, January 22, on "Syphilis in Pregnancy: Its Effect on Mother and Child."——The St. Louis Trudeau Club was addressed, January 7, by Drs. Duff S. Allen and George D. Kettelkamp on "Bilateral Apical Thoracoplasty for Bilateral Pulmonary Tuberculosis"; Peter Heinbecker, "Innervation of the Lung," and Faumleroy Flinn, Decatur, Ill., "Pneumonoconiosis."——At the January 8 meeting of the Nodaway County Medical Society, Drs. Jabez N. Jackson and John H. Ogilvie, Kansas City, spoke on "Carcinoma of the Breast" and "Chronic Cystic Mastitis," respectively.

NEW YORK

Anniversary of County Society.—The Onondaga County Medical Society celebrated the one hundred and twenty-fifth anniversary of its founding with a special meeting in Syracuse, January 5. Dr. Louis J. Bragman presented a paper on the history of medicine in the county and the following were special guests of the society: Hon. Edmund H. Lewis, justice of the supreme court of New York, who spoke on medical testimony; Franklin H. Chase, historian, Onondaga Historical Association, and Drs. John Van Duyn, professor emeritus of surgery, Syracuse University School of Medicine; William D. Johnson, Batavia, and Charles Gordon Heyd, New York, president and president-elect, respectively, of the Medical Society of the State of New York.

Bills Introduced.—S. 71 proposes to create in the department of education a division of medicinal liquor, to be under the supervision of the state board of medical examiners, which is to have power to adopt rules and regulations directing the manner and method by which intoxicating liquors may be prescribed, sold and used for medicinal purposes, provided no limit may be set on the amount of intoxicating liquor that may be prescribed for medicinal purposes by duly licensed and registered physicians. S. 79, to amend the workmen's compensation act, proposes to provide compensation for all occupational diseases arising out of employments within the terms of the act. S. 155 proposes to require the annual registration with the state department of health of all laboratories or other places handling or cultivating live pathogenic germs. A. 73, to amend the workmen's compensation act, provides that a claim of a physician for medical or surgical attendance or treatment of an injured employee shall be valid and enforceable against the employer unless the physician refuses to furnish to the employer, on request from him, a report of such injury and treatment administered. A. 116 proposes to make it unlawful for any person to sell at retail or give away in tablet form bichloride of mercury, mercuric chloride or corrosive sublimate unless such substance when so sold or given away shall be given in the form of tablets of a distinctive shape and color, and shall be put in bottles of a distinctive shape and color, labeled "for external use only."

New York City

Personal.—Dr. Ernest Ketchum Tanner has been appointed chief of staff of the surgical division of Brooklyn Hospital to succeed the late Dr. Walter A. Sherwood.——Dr. Perry M. Lichtenstein, for eighteen years resident physician in Tombs Prison, was recently appointed medical assistant to the district attorney, succeeding Dr. Otto H. Schultze.

Cancer Relief Fund.—The will of Dr. John Edmund MacKenty, who died, Dec. 11, 1931, provides $50,000 for the "MacKenty Fund," the income of which is to be used for educational propaganda on cancer of the larynx and to help defray expenses of charity patients operated on at the Manhattan Eye, Ear, Nose and Throat Hospital for this disease. Dr. MacKenty had been a senior surgeon at the hospital.

Institute for Child Guidance to Be Discontinued.—Financial support of the Institute for Child Guidance, established five years ago by the Commonwealth Fund as a training center for psychiatric workers, will be withdrawn by the fund, July 1, 1933, according to a recent announcement. Dr. Lawson G. Lowrey is director of the institute, which has a staff of six psychiatrists, three psychologists, fifteen social workers and about twenty general workers. A statement issued by Barry C. Smith, director of the Commonwealth Fund, said that the economic depression had forced the fund to decrease its commitments and that discontinuance of the institute would cause less damage than curtailment of some other activities. He pointed out that facilities for the training of mental hygiene workers have greatly increased during the five years of the institute's existence. About 45 workers are at present receiving training at the institute and about 400 children are receiving treatment.

Society News.—Charles-Edward A. Winslow, Dr.P.H., New Haven, Conn., discussed problems of medical care at a meeting of the Medical Society of the County of New York, January 25. In his inaugural address as president of the society, Dr. David J. Kaliski discussed problems of organized medicine.——Dr. George Draper, among others, addressed the International and Spanish-Speaking Association of Physicians, Dentists and Pharmacists, January 19, on "Infantile Paralysis as an Epidemic Disease."——Dr. Morris S. Bender gave a lecture on "Nasal Accessory Sinus Disease: Diagnosis and Treatment," in the auditorium of the Queens County Medical Society, January 22.——The *New York Medical Week*, official organ of the Medical Society of the County of New York, celebrated with the issue of January 16 the tenth anniversary of its founding.——A symposium on urology was conducted before the New York chapter of the Pan American Medical Association, January 22, by Drs. Joseph F. McCarthy, James I. Farrell and Robert Gutierrez.

NORTH DAKOTA

Society News.—Dr. Walter R. Johnson, Rochester, Minn., addressed the Northwestern District Medical Society at Minot, Nov. 12, 1931, on "Differential Diagnosis of Jaundice."——Dr. Frank I. Darrow, Fargo, gave the presidential address before the Cass County Medical Society, Dec. 29, 1931, on "Review of Recent Advances in Medical Science," and Dr. Arthur C. Fortney, St. Paul, Minn., spoke on "Nephrosis."

PENNSYLVANIA

Society News.—Dr. Frederic Maurice McPhedran, Philadelphia, addressed the annual meeting of the Pennsylvania Tuberculosis Society, Pittsburgh, January 20, on diagnostic standards in the early recognition of childhood tuberculosis.——The annual meeting of the Hospital Association of Pennsylvania will be held in Pittsburgh, March 15-17.——Dr. Curtis C. Mechling, Pittsburgh, addressed the Butler County Medical Society, January 12, on "Treatment of Acute Hemorrhoids by Interstitial Injections."——Dr. Charles R. Austrian, Baltimore, addressed the Erie County Medical Society, Erie, January 5, on coronary occlusion.

Philadelphia

Personal.—Dr. Isidor Paul Strittmatter was recently elected president of the Medical Club of Philadelphia, succeeding Dr. Frank C. Hammond.——Dr. Earl D. Bond, professor of psychiatry, University of Pennsylvania School of Medicine, has been appointed by the governor a member of the state welfare commission.

Decrease in Diphtheria Death Rate.—Philadelphia's death rate for diphtheria in 1931 was 1.48 per hundred thousand, the lowest in the history of the city. There were 282 cases reported, with 29 deaths. The death rate in 1925 was 16.7. The decrease was ascribed by health officials to a persistent campaign for the use of toxin-antitoxin.

Society News.—Dr. James H. McKee delivered the weekly postgraduate seminar of the Philadelphia County Medical Society, January 29, on "Children's Diseases and Dietetic Control."——Dr. Hermann Prinz addressed the Academy of Stomatology of Philadelphia, January 26, on "Diseases of the Soft Tissues of the Mouth."——Dr. Charles Mazer addressed a joint meeting of the North End Medical Society and the North Branch of the Philadelphia County Medical Society, January 28, on "Practical Application of Our Recent Knowledge of Sex Hormones."

SOUTH CAROLINA

Bills Introduced.—H. 117 proposes to provide that before a marriage license may issue, the male applicant must submit a certificate of a reputable physician stating that the male party is free from all venereal diseases at a time not more than ten days prior to the date of such application. H. 554 proposes to discontinue the school of pharmacy at the University of South Carolina. H. 549 proposes to provide liens for

hospitals treating free patients on amounts due such patients on accident and health insurance policies. The lien is not to exceed 50 per cent of such insurance nor more than $1.50 daily per patient.

TENNESSEE

Society News.—Dr. James Frazier Binns addressed the Nashville Academy of Medicine, January 19, on "Lead Poisoning in Infants and Children."——Dr. Ernest R. Zemp, Knoxville, addressed the Knox County Medical Society, January 19, on gastric ulcer.——The Chattanooga and Hamilton County Medical Society opened new headquarters in the Medical Arts Building in Chattanooga, Dec. 30, 1931.

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from eighty-three cities with a population of 36 million, for the week ended January 16, indicate that the highest mortality rate (20) appears for Memphis and the rate for the group of cities, 12.1. The mortality rate for Memphis for the corresponding period last year was 15.9 and for the group of cities, 14. The annual rate for the eighty-three cities for the two weeks of 1932 was 12.5, as against a rate of 14 for the corresponding period of 1931. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

WASHINGTON

Society News.—Dr. Loyal Davis, Chicago, will address the King County Medical Society, Seattle, February 1, on "Surgical Treatment of Trigeminal Neuralgia."——Dr. Willis C. Campbell, Memphis, Tenn., was the guest of the Seattle Surgical Society at its annual meeting, January 29-30. Dr. Campbell held dry clinics on fractures of the neck of the femur and on industrial surgery, and made an address at the annual banquet on "Affections of the Lumbosacral Region."——Dr. Stuart William Harrington, Rochester, Minn., addressed the Spokane County Medical Society, Spokane, Dec. 16, 1931, on pulmonary surgery.——Dr. Joel W. Baker, Seattle, among others, addressed the Lewis County Medical Society, Dec. 14, 1931, on "Surgical Pitfalls in Acute Appendicitis."——A symposium on diabetes comprised the program of the Pierce County Medical Society, Tacoma, Dec. 8, 1931. Speakers were Drs. Warren B. Penney, Frank R. Madison, Joseph R. Turner, Jr., David H. Johnson, Walter G. Cameron and William W. Mattson.

WEST VIRGINIA

Society News.—Dr. Joseph Colt Bloodgood, Baltimore, addressed the Ohio County Medical Society, Wheeling, January 8, on "What Every Physician Should Know About Cancer for the Protection of His Family, His Patients and Himself." Dr. Charles Mayo, Rochester, Minn., addressed the society, Dec. 18, 1931, on "Some Unappreciated Hepatic Functions." Dr. Emil Novak, Baltimore, spoke, January 22, on "Cause and Treatment of Uterine Bleeding."——Dr. Wilson Pendleton, Asheville, N. C., addressed the Kanawha County Medical Society, Charleston, Dec. 1, 1931, on "Appraisal of the Tuberculous Patient."——Dr. William E. Whiteside, Parsons, read a paper entitled "Should Uncle Sam Care for Veterans and How?" before the Barbour-Randolph-Tucker Counties Medical Society, Elkins, Dec. 15, 1931.——Drs. Thomas M. Barber and John P. Lilly, Charleston, addressed the Central West Virginia Medical Society, in Summersville, Dec. 18, 1931, on "Treating the Well Child" and "Practical Obstetric Problems," respectively.——The annual conference of secretaries of county medical societies of West Virginia was held, January 18, at Charleston. Speakers were Drs. George R. Maxwell, Morgantown, on "The Secretary"; Moritz F. Petersen, Charleston, "Looking Forward to the Job"; Joseph A. Striebich, Moundsville, "The Smaller County Societies," and Albert H. Hoge, Bluefield, president of the West Virginia State Medical Association, "Our State Institutions."

GENERAL

Site for Surgeon General's Library.—A resolution was adopted by the Medical Society of the District of Columbia, January 6, deprecating the passage of any legislation which would prevent the removal of the Surgeon General's Library to the Army Medical Center, in close relation to the Walter Reed General Hospital and the Army Medical School, or which would remove it from the control of the surgeon general of the army. The resolution pointed out that, in addition to the fact that a site has already been purchased and is available at the Army Medical Center without further cost, it is essential for the completion of the center that a medical library be established there.

Medical Bills in Congress.—*Change of Status:* S. 1234, to authorize an emergency appropriation for special study and demonstration work in rural sanitation, has been favorably reported to the Senate, with amendments. *Bills Introduced:* S. 787, by Senator McNary, Oregon, to construct a marine hospital at Portland, Ore. S. 2240, by Senator Bingham, Connecticut, to provide certain benefits for women who served with the American Expeditionary Forces during the World War. S. 3090, by Senator Copeland, and H. R. 8077, by Representative Beck, Pennsylvania, to remove the restrictions now imposed on physicians with respect to the prescribing of spirituous and vinous liquors for medicinal purposes. The bills last named are sponsored by the American Medical Association. S. 3138, by Senator Lewis, Illinois, to amend an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the causes and means of transmission of yellow fever," by including therein the name of Gustaf E. Lambert. S. 3148, by Senator Bingham, Connecticut, to regulate the use and sale of wood alcohol. S. 3176, by Senator McNary, Oregon, to establish a laboratory for the study of the criminal, dependent and defective classes. S. 3181, by Senator Tydings, Maryland, to erect an 854 bed addition to the veterans' hospital at Perry Point, Md. H. J. Res. 37, by Representative Erk, Pennsylvania, to designate the first United States Narcotic Farm, to be established near Lexington, Ky., as the Stephen G. Porter Institute. H. J. Res. 211, by Representative Celler, New York, to remove "the causes of irritation and resentment on the part of the medical profession concerning the prescribing of medicinal liquors." H. R. 30, by Representative Evans, California, to provide hospitalization for members of the Fleet Naval Reserve and retired enlisted men. H. R. 46, by Representative Peavey, Wisconsin, to provide aid for blind or blind and deaf Indians. H. R. 299, by Representative Griffin, New York, to provide for medals of honor and awards to government employees for distinguished service in science or for voluntary risk of life and health beyond the ordinary risks of duty. H. R. 368, by Representative McClintic, Oklahoma, to authorize the hospitalization of ex-service men of the World War "in any private hospital when sufficient facilities are not available in regular veterans' hospitals." H. R. 4601, by Representative Kelly, Pennsylvania, to erect a 250 bed addition to the United States marine hospital, at Pittsburgh. H. R. 4755, by Representative Leavitt, Montana, to erect a hospital on Crow Indian Reservation, Montana. H. R. 5502, by Representative Kelly, Pennsylvania, to authorize the Bureau of Mines to manufacture radium for the Veterans' Administration. H. R. 5850, by Representative Rankin (by request), Mississippi, to authorize the hospitalization in other than government hospitals of veterans suffering from disabilities not of service origin and to authorize outpatient treatment for such veterans. H. R. 7539, by Representative Clancy, Michigan, to create a service-origin, or aggravation, presumption for osteitis deformans, chronic arthritis, sarcoma or carcinoma. H. R. 7622, by Representative Chase, Pennsylvania, to authorize a 295 bed addition to the veterans' hospital at Coatesville, Pa. H. R. 7630, by Representative Condon, Rhode Island, to erect a veterans' hospital in northern Rhode Island or southeastern Massachusetts. H. R. 7719, by Representative McSwain, South Carolina, to establish a branch home of the National Home for Disabled Volunteer Soldiers in South Carolina. H. R. 7723, by Representative Hogg, West Virginia, to erect a 194 bed addition to the veterans' hospital at Huntington, W. Va. H. R. 7724, by Representative Campbell, Iowa, to erect a 300 bed addition to the veterans' hospital at Knoxville, Iowa. H. R. 7918, by Representative McSwain, South Carolina, to set apart a suitable plot of ground in Arlington National Cemetery for the burial of the bodies of the heroes of the fight against yellow fever. H. R. 8159, by Representative Evans, Montana, to erect a 250 bed addition to the veterans' hospital at Fort Harrison, Montana.

CORRECTION

The Ductless Glands as They Appertain to Eye Diseases and to Surgery.—In the article by Dr. A. D. Ruedemann in THE JOURNAL, Dec. 5, 1931, the sentence near the top of the second column on page 1702 "These patients had low blood content of calcium and of phosphorus, and other signs of parathyroid disturbance" should read "These patients had low blood content of calcium and an increase of phosphorus, and other signs of parathyroid disturbance." On the next page the third conclusion should read "In parathyroid tetany, lens changes are sometimes present, probably the result of a combination of spasm with a deficiency of calcium and an increase in phosphorus."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 26, 1931.

Birth Control

At the first annual meeting of the National Birth Control Association Mr. H. J. Laski, professor of political science at the London School of Economics, delivered an address. He said that birth control seemed essentially part of the general process of civilization. It was inevitable at some period of evolution that intellect should replace blind impulse in the control of the sexual relations. It was impossible to limit the range of anything so explosive as knowledge. Society of today could allow birth control to percolate from its upper layers to the working classes by accident, but such a course would do illimitable harm. On the other hand, it could extend that knowledge as part of a deliberate effort to plan civilization, as part of the birthright of every civilized man and woman. The control of the problems of population would be as important for society as the discovery of fire. The first objection raised by opponents was the religious one. Professor Laski denied that a society which had become independent of any form of religious organization should allow the theses of any particular religion to determine the life of the state. This would be an attempt of the minority to dictate to the majority. The second objection was political—that birth control would challenge the power of the country and, indeed, of Western civilization. Those who thought in concepts of power were inviting the perpetuation of a philosophy that would make the whole of civilization a legend. It was essential to think in terms of the object of civilization. Moreover, civilization depended not on the quantity of the mob but on the quality of the brains at its disposal. A third argument was that birth control endangered the basis of morality. As an historian he resented the ignorance so displayed. Birth control was an emancipation, particularly for women, but also for children and for men. The first duty of society was medical research in birth control, a function that ought to be assisted just as much as research into cancer or tuberculosis. Secondly, the state should make available a full supply of cheap birth control clinics as an essential part of the service of maternity and child welfare. Thirdly, the latest knowledge of birth control should be part of the curriculum of the medical student.

The president of the association, Sir Thomas Horder, Bt., F.R.C.P., said that indiscriminate child bearing might be a disease of the human body and certainly was a disease of the body politic. Before anything could be done to modify the medical curriculum, it was necessary to convince society, first that it had a disease and secondly that it wanted to be cured. He viewed indiscriminate child bearing as a disease and therefore was anxious that birth control should be included in the medical curriculum. It was the duty of the medical profession to devise, improve and teach the remedy. It was for such as Professor Laski to show the extent of the disease and what would happen if it were not cured or to a large extent palliated.

The Growth of London

The London county council has a greater London regional planning committee to secure more ordered development of the wide area around the metropolis, including the preservation of a green belt and other open spaces. In the past, the growth of London has not been regulated. The vast movement of people and the growth of industry now necessitate some plan. The population of greater London has reached 9,144,093, an increase over that of 1921 by 918,297. Allowing for the natural increase of the 1921 population, it appears that from 350,000 to 390,000 persons have come from outside. In addition to this immigration there have moved outward from the inner area, administered by the London county council, all the natural increase of its 1921 population, about 298,000, plus 87,702 representing an actual decrease which has taken place in the population of the county. Including the natural increase of its own population, the region outside of the county area has absorbed in the decade the enormous number of 1,005,999 fresh inhabitants. New industries, with all the shops and accessory buildings required, have spread haphazard over the area without any guidance or control. Great and difficult problems have been created in this outer region, which, in addition to its natural increase of population, has had to absorb an annual average of 38,500 flowing outward from the county area and 39,000 flowing in from the outside. To provide for games and adequate recreations of the 1,000,000 increase of population, nearly 11 square miles of suitable land would have been required in addition to parks and rural reserves. The prospect of securing this is diminishing year by year as the region becomes more populated. A town and country planning bill is before parliament to secure these desirable ends.

The Unsound Finance of Medical Socialism

The report of the government actuary, Sir Alfred Warren, on the assets and liabilities of the "approved societies" (friendly societies approved by the government and therefore recognized for administration of the national insurance act) is serious. Formerly the finance of the friendly societies was quite sound. With the passing of the national health insurance act the government entered into it and provided large subsidies, both from the taxpayer and from the employers. But the wastefulness of socialism had its inevitable result. Sir Alfred Warren reports that whereas the valuation of the reserves revealed a considerable strengthening of the societies, the present position is that the societies are collecting less than 90 per cent of the amounts paid in benefits. This is largely due to the widespread unemployment. When this became acute in 1928, concessions were made in respect of arrears of contributions in cases of proved unemployment. But claims for sickness and disablement benefit were made out of all proportion to legitimate expectations. The government actuary observes: "The health of the population, as measured in terms of incapacitating sickness and disablement, is doubtless affected in some degree by economic conditions but cannot be admitted to vary with them to such an extent as to explain the increase of sickness claims in recent years." Causes of excess which are definitely controllable are conclusively shown to have been in operation. "Serious tasks rest on those responsible for certification and the supervision of claims." The claims made by insured women are considerably in excess of anticipations and endanger the finance of the societies concerned.

The actuary makes the following suggestions: If the present benefits are to be maintained, an increase of contributions is required; if the contributions are unaltered, a modification of the benefits is essential. The increase of contributions required is from the present weekly rate of 17 to 20 cents. Alternatively, the reduction of benefits would be from $3 to $2.50 weekly. For continuation of the present rates a reduction of 20 per cent in the cost of benefits would be necessary, and this does not seem possible. So much for this piece of medical socialism, which was introduced by Lloyd George with much unction as a great boon. The unemployment, to which some of the trouble is attributed, is due to business depression which in turn is largely due the burden placed on industry by this and other forms of socialism. Unless the country has learned its lesson, we are now faced with a continuation of this vicious circle.

Illicit Drug Traffic

At a meeting of the Pharmaceutical Society of Great Britain, Mr. M. D. Perrins, a government official, gave an address on the international illicit traffic in dangerous drugs. He said that the principal markets for smuggling drugs were the United States, China, Egypt, India, the South American republics and, to a less extent, Canada. Illicit traffic in drugs was linked with other illicit traffics, wherever they were to be found. Smugglers running arms to China frequently smuggled drugs as well. In the United States the problem was intimately connected with rum running, although the sources of supply were not the same. The routes by which smuggled drugs flowed, varied in accordance with the degree of efficiency of control and of administration in the various countries. The principal routes now followed were from the Dardanelles to Marseilles and thence to the United States and the Far East, but smugglers were constantly changing their methods. The manufacture of drugs on a large scale had been begun in Turkey only within the last two or three years and until quite lately had been subject to no effective control. It was admitted that enormous quantities had been manufactured. Fortunately, it seemed that the Turkish authorities, now that they were alive to the situation, were likely to bring the traffic under adequate control. Under the dangerous drugs regulations in this country no person, unless authorized or licensed to do so, might procure or offer for sale dangerous drugs for any person, whether in Great Britain or elsewhere. Such a provision in the law of other manufacturing countries would, he thought, stop a great deal of illicit traffic. He had particularly in mind a European capital in which well known drug traffickers congregated from all quarters of the globe. Our government was in the closest contact with the central narcotic authorities in several other countries (particularly the United States, Canada, Holland and Egypt) and had established machinery which resulted in almost daily interchange of information in regard to the activities of known and suspected drug traffickers. But they still needed the cooperation of some important countries. In spite of enormous difficulties, much progress had been made, slowly but surely. The conscience of nations had been awakened, the manufacture of morphine, heroin and cocaine in western Europe had been considerably reduced, and the way of the trafficker made exceedingly hard.

Advances in Knowledge of Vitamins

In his presidential address to the Royal Society, Sir Frederick Gowland Hopkins described the recent advances in our knowledge of vitamins—a subject in which he has laid the foundations. He said that although, unlike the hormones, the vitamins are of exogenous origin, their activities in the body are equally potent and their functions as indispensable. The number of known vitamins had grown to seven or eight and the study of their functions had become complex. It was highly satisfactory to know that we were within measurable distance of knowing the chemical composition of two. We now had proof that vitamin A was closely related to the carotenes, and this might lead to artificial synthesis of the vitamin itself. It seemed probable that the artificial production of vitamin D had been accomplished. Some four years ago the constituent of animal and vegetable substances, which was converted into vitamin D by ultraviolet radiation, was identified as ergosterol by Rosenheim and Webster at the National Institute for Medical Research, and concurrently by Windhaus at Göttingen. A team of workers at the National Institute, led by Dr. R. B. Bourdillon, appeared now to have arrived at the next stage, of isolating the vitamin itself in crystalline form, from the mixed products of radiation; and Windhaus, following with his co-workers a different route, had again arrived simultaneously at the same goal. There was now no doubt that the substance which the British group isolated as a dinitrobenzoate from the mixed product was identical with the vitamin D which Windhaus obtained by a different method. There was little doubt that it was vitamin D in a state of practical purity. One milligram was of the antirachitic activity of 40,000 of the newly accepted international units. Our ignorance of the chemistry of the vitamins and the assertion that they function in such infinitesimal amounts caused some skepticism as to their importance. But this would disappear, and he ventured to predict that in quite other fields discriminative studies of animal nutrition were yet to yield unexpected results of much practical importance.

PARIS

(From Our Regular Correspondent)

Dec. 16, 1931.

Reinforcement of the Action of Antitetanic Serum

Antitetanic serum, while its preventive action is well established, is weak against tetanus that has progressed far enough to be diagnosed clinically. Dufour has greatly increased its action by his method, which is coming more and more into vogue in France and which consists in plunging the subject for twenty minutes into chloroform anesthesia after intravenous and intraspinal injection of the serum. The intervention can be repeated without danger for several days in succession, if necessary. It would seem that chloroform and ether, whose action on the lipoids of the brain has been invoked to explain their anesthetic effects, liberate the tetanic antitoxin from its union with the nerve cell and thus greatly increase its influence on Nicolaier's bacillus. Mr. Coudy of Marseilles has reported to the Academy of Medicine that he secured equally good results by adding to the antitetanic serum not an anesthetic but methenamine, the use of which is much simpler and less dangerous. The author bases his idea on the fact, observed by Le Fèvre de Arric and Millet in the rabbit, that methenamine renders permeable the barrier that the meninges opposed to the hemolysins. Likewise, the administration of methenamine by the intravenous route favors the passage of the antitoxins of the serum into the cerebrospinal fluid and the nerve centers. The clinical results observed by Mr. Coudy were drawn from thirty-one cases of tetanus in which this method was employed in the Dakar Hospital. They appeared favorable, for there were twenty-six recoveries. The author employed two forms of technic. In the first group of fourteen patients, in which there were ten recoveries and four deaths, each injection of serum was preceded, by half an hour, by from 0.5 to 1 Gm. of methenamine introduced by the intravenous route. In a second group of seventeen patients, in order to prevent the methenamine from liberating the toxins too soon before the serum could act, the author gave first an injection of 20 cc. of serum and then continued with daily intravenous injections of methenamine, followed by serum injected subcutaneously. In two cases of umbilical tetanus in the new-born, methenamine was injected by mouth, including a total of 9 Gm. in fourteen days, supplemented by 240 cc. of serum. Mr. Coudy has used his method in the hospitals of Marseilles. He conducts his treatment at present in the following manner: The patient receives first an intravenous injection of 20 cc. of serum; then, after an hour and a half or two hours, an intravenous injection of from 0.5 to 1 Gm. of methenamine, followed, after a half hour, by a new injection of serum. One or two further injections of serum are given, each preceded by an injection of methenamine. Of seventeen patients so treated, more than half of whom presented a grave tetanus, only one died.

Creation of a Free Public Health Consultation Service

Dr. Dujarric de la Rivière, general secretary of the Société de médecine publique et d'hygiène professionnelle, organizer of the annual congress of health, has recently opened, in a popu-

lous quarter of Paris, a new type of establishment that is a veritable bureau of information on public health. The new service is not a dispensary nor a consultation bureau, and no treatment is given to patients. The health consultation bureau is open to all those who desire opinions on questions of individual or collective health: for example, general principles of individual health, hygiene of the home, rational diet, physical exercise, baths, swimming pools; special hygiene: of the nursling, the school child, the aged person; hygiene of work; vocational guidance; crusade against social scourges; crusade against infectious diseases; procuring of analysis of contagious material derived from patients; procuring of water analysis; disinfection after contagious disease; where one can procure vaccination against typhoid or diphtheria; addresses of dispensaries and societies of social hygiene; information on sanitary legislation. What characterizes essentially this new service is the immediate contact of the hygienist with the public and the individual character of the opinions that are given. Likewise, tracts and prospectuses pertaining to the general ideas of health are distributed.

Professor Hayem Honored

Professor Hayem has just entered on his ninetieth year. In honor of the occasion, two special ovations were organized, one at the Academy of Medicine, where the president, Professor Lapersonne, transmitted to him the congratulations of his colleagues, to which he replied with a tinge of sadness, and another at the Hôpital St. Antoine, where he served for fifty-one years. Professor Bezançon delivered an address in the name of his colleagues and pupils, most of whom were present: Siredey, Netter, Bensaude, Lyon, Laubry and others. Bensaude emphasized the value of his works, his unselfish scientific spirit, and the high character of his instruction. Professor Hayem, deeply affected, rose to thank the speakers, and then, addressing himself to the young students who filled the auditorium, he outlined for them, in well chosen words, the duties of the physician, whom he pictured as a priest ministering to human suffering, and characterized by an exclusive devotion to the search for truth—but neglected to state that he himself had furnished an example of such devotion.

BERLIN

(From Our Regular Correspondent)

Dec. 7, 1931.

The Bad Effects of Prohibition in Finland

In Finland, a plebiscite is to be held, December 30, to decide whether or not the prohibition against alcoholic beverages that has been the law of the land since 1920 shall be retained or abolished. It is expected that a large majority will vote for abolition of the law, which finds its explanation and justification in the fact that the prohibition against alcoholic beverages has caused great damage in the fields of economy and public morals. In the *Deutsche medizinische Wochenschrift*, Dr. Günter Schmölders gives a more or less complete list of the most recent observations on the effects of the prohibition law. A number of the Finnish physicians have admitted in various inquiries that alcoholism has undergone no change as a result of prohibition—or, if anything, conditions are worse. This is shown particularly by the increase in mental disturbances due to alcohol. In the larger Finnish psychopathic hospitals there has been a permanent increase in the number of alcohol addicts admitted. The number increased from 8 per cent in 1920 to 28 per cent in 1928. During the period in which prohibition has been in force, alcoholism has more than trebled. This unfavorable picture is confirmed by official statistics. In 1928, fifty-four persons died in Finland from alcoholism; that is to say, 1.5 per hundred thousand of population, a figure that is considerably higher than the corresponding figure for Prussia, while it is unlikely that all the cases of death from alcoholism in Finland were reported. The total number of cases of mental disease during the decade of prohibition increased by more than one half, whereas the increase over a period of ten years has not usually been 10 per cent. Also the statistics on the general health of the people show that the prohibition of alcoholic beverages has not only failed to accomplish its purpose but has actually made matters worse. It was found that of the adults (according to inquiries made in the hospitals) only about 12 per cent actually refrained from alcoholic beverages. The statements of patients reveal a most startling picture of the spread of alcoholism in Finland, conditions in the cities and in the rural districts being much the same. The evidence shows that sometimes most harmful mixtures of alcoholic beverages were drunk. Strange to relate, alcoholism among the inhabitants along the coast, who were frequently engaged in smuggling, is not so common as elsewhere, possibly because these people are more familiar with the doubtful quality of the smuggled beverages. Everywhere prohibition has caused more women and juveniles to adopt the habit of drinking intoxicants. The abuse of alcoholic beverages, which has increased to such an extent as a result of prohibition, is reflected in all fields of social hygiene but most impressively through the increase of accidents. Statistics collected in the General Hospital at Helsingfors showed that almost 40 per cent of all accidents and injuries were due to alcoholism, whereas in 1913 the proportion was only 4.7 per cent. These injuries occurring during drunkenness, 25 per cent of which resulted from serious cases of stabbing, which reveals the particularly bad type of Finnish drunkenness, are in kind and gravity today more serious than before the war. Finland, before the war, with a total alcohol consumption of only about 1 liter per person, was considered the most abstemious country of Europe; today the amount of alcoholic beverages smuggled in annually from Esthonia and the German harbors of the Baltic amounts to twice as much. With this enormous increase in the consumption of alcoholic beverages, it is not surprising that in Helsingfors, with a population of 216,000, about 25,000 arrests for drunkenness are made yearly, from which may be deduced the monstrous fact that, on an average, a third of the adult males of the city are found once a year in a deeply intoxicated condition on the public streets. This abuse of alcoholic beverages suffered no decline as a result of the economic crisis of 1930, which in all the countries in which alcoholic beverages are not prohibited brought about a reduction of the consumption.

The Lübeck Trial

The court in whose hands rests the decision in the Lübeck disaster, as the result of which seventy young children developed tuberculosis and died, has been sitting for weeks. As was to be expected, the court room has been the scene of considerable excitement. What the final outcome of the trial will be cannot be foretold. Calmette was asked to serve as an expert witness but did not comply with the request. That the question of protective inoculation with the B C G vaccine has caused considerable agitation and excitement in Germany is only natural. Among other manifestations, the Vereinigung der deutschen Hebammen (midwives) has raised a voice of protest against the practice of men of science of putting into their hands or recommending the use of preparations or remedies that may result disastrously for the life and health of parents and children, as was shown by the use of the Calmette vaccine. The midwives as a profession demand the unconditional protection of the authorities, in order that they may not lose the respect and confidence of the public through such occurrences as happened in Lübeck.

The treatment of tuberculosis is at present a trump card. In that connection, F. F. Friedmann, who is not unknown in

the United States, has bobbed up again. A number of writers have appeared who show more or less marks of his influence. In addition, an international antituberculosis league (section Germany) has been formed. The estimate that is placed on this league is revealed by the following paragraph:

The Union internationale contre la tuberculose, Paris XIII, 2, Avenue Velasquez, which comprises the official tuberculosis commissions of forty countries, deems it important to state that it is not identical with the Internationale Anti-Tuberkulose-Liga, Sektion Deutschland, in whose name the Friedmann book "Die besiegte Tuberkulose" (Tuberculosis Conquered) recently appeared, and in fact that it has no relations whatever with that organization. The Internationale Anti-Tuberkulose-Liga, Sektion Deutschland, was established in Berlin, July 22, 1931, and its name was recorded under number 6618 in the society register of the Central Berlin Amtsgericht. The members of the directorate are: (1) Franz Nagelschmidt, M.D.; (2) Attorney Dr. George Kaatz; (3) Michael Charol, a writer; (4) Prof. Günther Enderlein, Ph.D., all of Berlin, and (5) Geheimer Veterinärarzt Casparius, Dr. med. vet., in Gross-Kreutz.

Dr. Franz Nagelschmidt, whose name heads the list, is known to be one of the most ardent champions of the Friedmann remedy.

Roentgenologic Diagnosis and Obstetrics

After many years of experimentation and research, Professor Liepmann, director of the Gynecologic Institute in Berlin (Charlottenburg), and his co-workers, have broadened the knowledge of obstetrics by introducing ideas of practical value.

Taking as his point of departure the observations that Warnekos made by means of roentgenologic diagnosis, Liepmann found that the theory that the fetus is closely engaged by the uterus can no longer be maintained, although it is still advanced in all textbooks on obstetrics. His researches reveal, furthermore, that the uterus in most cases is not oval but constitutes a loose sac in which the fetus until birth can move about until the presenting portion becomes engaged in the pelvic cavity. For the first time, Liepmann demonstrated by means of a roentgenogram the truth of the Aristotelian gravitation theory, in connection with a twin birth, in which, by having the woman assume the Trendelenburg position, it was possible to bring into the breech position the twin that was not yet engaged, which is of considerable therapeutic importance. It thus becomes possible, in the future, by means of suitable turning movements of the mother, to influence the position of the fetus at will without internal interventions. The danger of infection that is always associated with internal interventions is thus avoided. The mechanism of the birth can thus be made visible. Many existing views were shown to be false; others could not be confirmed. The various turnings of the head in the pelvis could be easily observed in the roentgenogram.

For practical instruction in obstetrics, Liepmann has introduced a new method for the plastic representation of the fetus by the application of roentgen-traced drawings, which reconstruct in a perfectly natural manner the position in the uterus. Various positions of the child heretofore unknown to the student and the practitioner have been made familiar through the roentgen rays. Spontaneous changes in the position of the fetus are represented in the roentgenogram, and these lead to interesting experiments, which are of importance not only for forensic but also for social gynecology. They show that certain turning movements of the mother may cause also turning movements and changes of position on the part of the fetus. Just what value this will have for practical obstetrics remains to be seen.

In roentgenograms, the death of a child was observed and recorded for the first time. Furthermore, roentgen diagnosis enabled the examiner to obtain exact measurements of the pelvis without an internal examination. Also the period of the afterbirth can be made visible in all its phases and in its whole pathology. Thus, roentgen diagnosis is able to furnish an extensive and profound insight into the processes of pregnancy and birth.

RIO DE JANEIRO

(From Our Regular Correspondent)

Dec. 15, 1931.

Observations on Leprosy

Dr. J. M. Gomes, a member of the board of directors of the Instituto de Hygiene of São Paulo, recently reported his observations made in twenty-nine cases of leprosy of various types with the aim of discovering the presence or the absence of Mycobacterium leprae in the tissues of apparently normal areas of the skin (the finger tips, the forearm and the dorsum of the hands) as well as in the blood obtained from the median vein of the elbow. Only in one case was fever associated with the development of the disease. The bacillus was isolated nine times from the tissues of the finger tips, eighteen times from those of the forearm and twelve times from those of the dorsum of the hands. It is possible that the absence of sebaceous secretions in children up to the age of 9 years is the predisposing factor for a greater susceptibility to leprosy. The author deals with topics such as functions of the skin as an intermediary agent between the human organism and its environment, the external world; influences of the sun's radiations and especially of ultraviolet rays on the skin; functions of certain organs as natural filters of the body; intensity of filtration in different organs; permeability of the skin, and the so-called sun erythema and its principal histologic characteristics. The author reaches the following conclusions: In certain phases of leprosy, Mycobacterium leprae is present in the venous blood, from which it can be recovered. No general symptoms are observed during the development of leprosy, except in the phase of leprous septicemia in which fever, eruptions and some other symptoms appear. When the disease passes through this phase the bacilli may be isolated from the capillary or lymphatic spaces of nearly all areas of the skin. The presence of Mycobacterium leprae in the organism is not manifested by the appearance of general symptoms, and it is only by the examination of the blood with isolation of the micro-organism that it can be proved. The sun rays, especially the ultraviolet rays, produce on the areas of the skin that are constantly exposed to the light (those of the face, the dorsum of the hands, the forearm and the legs) the so-called sun erythema (a variety of erythema characterized by local vasodilatation), which is never observed in the areas of the skin of certain parts of the body that are not in constant contact with the light. The areas of the body that are protected against the sunlight have been considered immune to leprosy because they never present clinical lesions of the disease, although the bacilli may be isolated from the tissues, apparently normal, of those areas; but the areas of the body that are exposed to the light are frequently the seat of maculae which develop into leproma. The greater exposure of men than of women to the sunlight may explain the fact that the disease develops more in the former than in the latter. It is possible that sunlight and geographic and racial conditions may determine the incidence of the disease in the various countries.

Immunization of Infants with B C G Vaccine

Dr. Alvimar de Carvalho, a member of the Liga Brasileira contra la Tuberculosis, recently reported the clinical observations on sixty-one infants belonging to tuberculous parents or tuberculous families, who were given the B C G vaccine orally soon after birth. The observations cover a period of three years, during which the infants continued to live in their own homes and in the same insanitary conditions in which they lived

prior to receiving the immunization. The general development and health of forty-one infants of the entire group were normal and were better than those of the nonvaccinated children. The remaining twenty infants of the group showed unquestionable clinical symptoms of tuberculosis in evolution. (In eight of the infants, infiltration of the hilus pulmonis was discovered by roentgen examination; in six, tracheobronchial adenopathies were present; two had chronic tuberculous pneumonia; two had epituberculosis; one had acute caseous pneumonia, and one had tuberculous otitis.) The patient with acute caseous pneumonia and one of the patients with chronic tuberculous pneumonia died, thus giving a mortality of 3.2 per cent in the entire group. Comparison of the morbidity and mortality rate in infants who received the B C G vaccine by mouth and in those who did not receive any indicates the value of the method in the prophylaxis of infantile tuberculosis.

JAPAN

(From Our Regular Correspondent)

Dec. 5, 1931.

Antituberculosis Work

A donation to antituberculosis work was made by the late Baron Dr. Kitasato, and Drs. Kitashima and Takano, in memory of their father and son. The Japan Antituberculosis Association held a meeting, September 11, in the Association Hall at Marunouchi, Tokyo. After a report by Dr. Sato, the general secretary, an election was held for chairman of the councilors of the association, and Baron Dr. Kanasugi was elected.

Instead of allowing the local prefectural offices to impose a tax on radio listeners, which they were going to do next fiscal year, the home ministry decided to receive a yearly donation of 1,000,000 yen from the Japan Union Broadcast Association. This money will be distributed among the local prefectures according to the number of listeners and will be spent on antituberculosis work there.

A part of the interest on the Shoken Empress-Dowager's fund, which has been kept in trust in the Union of the Red Cross at Geneva, has been distributed to the Red Cross societies of Austria, Poland and Bulgaria. It is reported that the Red Cross Society of Siam, which received the remainder, has decided to establish the Empress-Dowager Shoken Home, for the antituberculosis society, near Bangkok, Siam.

Number of Cases of Tuberculosis

Mr. Adachi, the home minister, who has determined to amend the regulations concerning the spread of tuberculosis, has found it necessary to cooperate with the ministries of education, army, navy, legislature and railway, in addition to the general practitioners. An investigating committee, therefore, was appointed under the auspices of the ministry. The results of the investigation, which have been published, show that there were 48,003 tuberculosis cases on antituberculosis day held in April, 1931, and 7,702 of the patients were found to be unable to afford the expense for treatment and rest necessary to combat the disease. Reports were received from 22,914 physicians out of 28,516 who were directed by the government to report.

Tuberculosis Among Post Office Employees

The results of a medical examination of employees in the post offices in this country, carried out in November, 1929, and recently published by the authorities, show that there were 1,862 tuberculosis cases, or 1.55 per cent, among 120,012 employees who were examined at that time.

Dr. Tsuzuki Honored

A celebration was held in Tokyo, October 27, in honor of Dr. Tsuzuki, in view of his research on beriberi in connection with rice bran extract. Although he was the first to work on this study a score of years ago, the importance of his research has never been recognized till the present. Dr. Kitashima and others thought it proper to hold a ceremonial meeting in his honor. They unveiled a bust of him. In an address, he was highly praised by Dr. Kitashima for his discovery.

The Empress's Donation to the Antileprosy Campaign

The Empress is reported to have granted a large sum of money to the leprosy asylum established by the government in Okayama Prefecture. Dr. Mitsuta, chief of the asylum, went to Tokyo to receive the donation formally through the lord steward of the imperial household. It is also reported that the imperial household will, according to the laws, award a medal to contributors to the antileprosy campaign in this country.

Hospital News

Keio University has planned to enlarge its hospital attached to the medical department. The new building will have a capacity of more than 200 beds and will be completed in September, 1932.

The Medical Aspect of Athletics

September 17, under the auspices of the daily newspaper at Osaka, a meeting was held by Dr. Kinoshita and nine other scholars from the Kyoto Imperial University, the Osaka Imperial University and the Osaka higher medical college. They decided to establish a sports association in order to give just medical criticisms and directions to sportsmen in general in this country.

The American professional baseball team, which came to this country in November and played with Japanese teams, left Yokohama early in December. Dr. Sato, professor in the Nihon Medical College, who is eager to study the medical aspects of sports, made roentgen examinations of several of the American players during their stay in Tokyo. He photographed the shoulders, wrists and other parts of their body and is said to be going to contrast the figures of the champions with those of Japanese athletes.

Influenza in Tokyo

Owing to the extremely changeable weather, which came with the advent of early winter, influenza prevails in Tokyo. Dr. Inoguchi, chief health officer of the metropolitan police, reports that the total number of deaths in Tokyo during November was 6,380, which is an increase of 772 over the number during November, 1930. The 635 deaths caused by influenza was 157 more than in the same month last year. The peculiarity of the influenza this year is that there are a larger number of cases occurring between the ages of 21-25 and 41-45.

Personals

Dr. Takahashi, dean of the medical department of the Keijo Imperial University, was renominated, October 20, at the expiration of his term.

Dr. Sugita, former vice director of the Matsuzawa Lunacy Asylum, in the suburbs of Tokyo, who was appointed professor of psychology in the Niigata Imperial Medical College, was succeeded by Dr. Saito, chief of the James Lunacy Asylum near Tokyo.

Drs. Hayashi and Nakuye were sent to Europe to make a study of medical education there. Dr. Hayashi will attend the sixth International Congress on Physiology, which is to be held in Rome in April, 1932.

Prof. Dr. Yamasaki, dean of the Kumamoto Medical College, who has been engaged in medical education for thirty years, is reported to have resigned and to have been succeeded by Dr. Fujii, dean of the Nagoya Imperial Medical College.

President Hayashi and Vice President Shimozono of the Tokyo Medical Society were reelected for this year at a meeting held at Tokyo Imperial University, September 21.

Marriages

JOHN BRECKINRIDGE WOODVILLE, JR., Lansing, W. Va., to Miss Roberta Lee Walters of Richmond, Va., January 13.

FRANCIS HAROLD STOUP to Miss Polly Page Rabisch, both of Barnesville, Ohio, at Wheeling, W. Va., January 6.

RAMON PONCE DE LEON, Dumaguete, P. I., to Miss Francisca Arnaiz of Oriental Negros, Dec. 19, 1931.

JACK D. KIRSHBAUM, Chicago, to Miss Florence Leon Rosen of Montreal, Que., Canada, Dec. 27, 1931.

JOHN C. VERMEREN, Chicago, to Miss Rose Margaret Gill of Sun Prairie, Wis., Oct. 28, 1931.

OLIVER E. EHRHARDT, Springfield, Ill., to Miss Helen Stout of Brinkley, Tenn., January 7.

Deaths

James Riddle Goffe ✠ Bronxville, N. Y.; Bellevue Hospital Medical College, New York, 1881; emeritus professor of gynecology, New York Polyclinic Medical School and Hospital; past president of the American Gynecological Society; formerly professor of gynecology, Dartmouth Medical School, Hanover, N. H.; member of the American College of Surgeons; consulting surgeon to the Woman's Hospital, New York; member of the consulting staff of the City and County hospitals, New York, St. Joseph's Hospital, Yonkers, Mount Vernon Hospital, Mount Vernon, and the Lawrence Hospital, Bronxville; aged 80; died, Dec. 24, 1931.

Henry Longstreet Taylor ✠ St. Paul; Medical College of Ohio, Cincinnati, 1882; member of the American Climatological and Clinical Association; assistant professor of surgery at his alma mater, 1884-1889; for many years associate professor of medicine, University of Minnesota Graduate School; past president and vice president of the National Tuberculosis Association and past president of the Ramsey County Medical Society; formerly on the staffs of the Children's Hospital, St. Luke's Hospital and the Miller Hospital; for many years medical director of the Pokegama (Minn.) Sanatorium; aged 74; died, January 2, of intestinal influenza.

Nelson Gapen ✠ Colonel, U. S. Army, retired, Washington, D. C.; Georgetown University School of Medicine, Washington, 1900; entered the army as an assistant surgeon in 1902; served during the World War; was promoted through the various ranks to that of Colonel and was retired in 1930 for disability in line of duty; professor and chairman of the department of therapeutics at his alma mater; fellow of the American College of Physicians; aged 53; died, January 7, in the Georgetown University Hospital.

Benjamin Broadus Steedly ✠ Spartanburg, S. C.; Columbia University College of Physicians and Surgeons, New York, 1901; member of the American College of Surgeons; aged 57; chief surgeon to the Wallace Thompson Hospital, Union; surgeon to the Spartanburg General Hospital and surgeon and owner of the Chick Springs Hotel-Sanitarium, Taylors, where he died, January 12, of cerebral hemorrhage.

Artemas I. MacKinnon ✠ Lincoln, Neb.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1892; member of the American College of Surgeons; formerly instructor in surgery, University of Nebraska College of Dentistry; for many years surgeon to St. Elizabeth's Hospital; aged 64; died, Dec. 22, 1931, of hypertrophy of the prostate, nephritis and uremia.

Mary Eugenie Pogue ✠ Wheaton, Ill.; Hahnemann Medical College and Hospital, Chicago, 1900; member of the American Psychiatric Association and the Central Neuropsychiatric Association; medical superintendent and owner of the Mary E. Pogue School and Sanitarium; aged 61; died, January 3, in the Passavant Hospital, Chicago, of coronary thrombosis.

Samuel Lunt Hannon ✠ White Plains, Md.; Columbian University Medical Department, Washington, D. C., 1888; veteran of the Spanish-American War; aged 73; died, Dec. 24, 1931, in the Walter Reed General Hospital, Washington, D. C., of cholelithiasis, cholecystitis and arteriosclerosis.

Roy W. Griswold, Freeport, Mich.; Detroit College of Medicine, 1898; member of the Michigan State Medical Society; past president of the Barry County Medical Society; aged 58; died, Dec. 25, 1931, in the Pennock Hospital, Hastings, following an operation for gallstones.

Walter Bonnell Holton ✠ Ithaca, N. Y.; Cornell University Medical College, New York, 1909; member of the American College of Surgeons; surgeon to the Ithaca Memorial Hospital; aged 45; died, Dec. 27, 1931, of acute pachymeningitis and pulmonary tuberculosis.

George H. Weber ✠ Peoria, Ill.; Louisville (Ky.) Medical College, 1900; past president of the Peoria County Medical Society; on the staffs of the Methodist Hospital, St. Francis' Hospital and the Proctor Hospital; aged 55; died, Dec. 31, 1931, of angina pectoris.

John Eldon Corbin ✠ Clarksburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1907; served during the World War; at one time secretary of the Harrison County Medical Society; aged 51; died, Dec. 16, 1931, in a local hospital, of influenza.

Arthur Laurence Muren, Belleville, Ill.; National University of Arts and Sciences Medical Department, St. Louis, 1924; member of the Illinois Medical Society; served during the World War; aged 42; died, Dec. 26, 1931, of a self-inflicted bullet wound.

Robert James Phillips, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1888; member of the Medical Society of the State of Pennsylvania; aged 75; died, Dec. 24, 1931, of Buerger's disease and acute myocarditis.

Nicholas William Lawless, Morristown, N. J.; University of the South Medical Department, Sewanee, Tenn., 1904; served during the World War; aged 55; died suddenly, Dec. 22, 1931, of heart disease.

Alexander Woods, Van Nuys, Calif.; St. Louis Medical College, 1873; Civil War veteran; formerly coroner of St. Clair County, Ill.; aged 86; died, Dec. 7, 1931, of chronic nephritis.

Edward Herman Frederick Frisch, Atlantic City, N. J.; Albany (N. Y.) Medical College, 1907; aged 56; died, Dec. 30, 1931, in the Atlantic City Hospital, of injuries received in a fall.

Baylor M. Spotts, Marshall, Mo.; Missouri Medical College, St. Louis, 1891; member of the Missouri State Medical Association; aged 65; died, Oct. 18, 1931, of prostatic disease.

Augusta Vedin, New York; Woman's Medical College of the New York Infirmary for Women and Children, 1890; aged 70; died, January 10, of bronchitis and pulmonary edema.

Isaac N. Monfort, Detroit; Eclectic Medical Institute, Cincinnati, 1877; aged 85; died, Dec. 20, 1931, of cerebral hemorrhage, cerebral embolism and chronic endocarditis.

Adam Clarke Davis ✠ Creighton, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; aged 62; died, Dec. 13, 1931, of myocarditis and arteriosclerosis.

John K. McNulty, Sinking Spring, Ohio; Cincinnati College of Medicine and Surgery, 1885; aged 69; died, Nov. 11, 1931, of uremia and hypertrophy of the prostate.

James Shelton Eldredge, Kansas City, Mo.; University Medical College of Kansas City, 1899; aged 61; died, Dec. 19, 1931, of angina pectoris and coronary thrombosis.

Joseph Bassett Kirby, Stamford, Conn.; Medical Department of the University of the City of New York, 1880; aged 79; died, Dec. 12, 1931, of cerebral hemorrhage.

Thomas Brigham Aitcheson, Schuylerville, N. Y.; Cornell University Medical College, New York, 1931; aged 24; died, Dec. 10, 1931, in New York, of septicemia.

Timothy D. Lehane, New York; University of Louisville (Ky.) School of Medicine, 1893; aged 63; died, Dec. 19, 1931, in St. Vincent's Hospital, of diverticulitis.

John Joseph Aloysius Lyons ✠ Albany, N. Y.; Albany Medical College, 1908; aged 52; died, Dec. 26, 1931, of carcinoma of the transverse colon.

Charles H. Graves, Center, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1889; aged 68; died, Dec. 18, 1931, of cerebral hemorrhage.

Luman Gordon Moore, Kinsman, Ohio; Long Island College Hospital, Brooklyn, 1873; aged 82; died, Dec. 11, 1931, of bronchopneumonia.

St. John Naftel, Lapine, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 75; died, Dec. 15, 1931, of pneumonia.

Charles B. Hyland, Los Angeles; Medical Department of the University of the City of New York, 1885; aged 71; died, Nov. 30, 1931.

Arthur L. Gast, Prospect, Ohio; Columbus Medical College, 1892; aged 70; died, Dec. 3, 1931, of myocarditis.

Bureau of Investigation

INSTITUTE OF WESTERN RESEARCH

Perpetuating the Record of California's Romantic Past—and Present

The Institute of Western Research, claiming to have offices in Los Angeles and San Francisco, with its head office at 701 Printing Center Building, Los Angeles, is issuing, or has issued, pieces of publicity for products and persons of a medicinal and medical character.

There came to the Bureau of Investigation some neat little booklets, on which it was stated that they were compiled by the Institute of Western Research and reprinted by permission of the institute. There was nothing in these booklets to show where the Institute is located; each, however, was copyrighted by the Powell Publishing Company of Los Angeles. Each constituted what was essentially a piece of publicity or testimonial for some institution or individual. One page of each booklet was devoted to a list, printed in capitals and neatly "boxed," of what purported to be the names of the "Charter Members of the Institute of Western Research." The individuals whose names thus appeared were:

JUDGE BENJAMIN F. BLEDSOE	LOUIS B. MAYER
PAUL N. BOGGS	RT. REV. JOHN J. CANTWELL, D.D.
GEORGE I. COCHRAN	K. R. KINGSBURY
HARRY CHANDLER	R. STANLEY DOLLAR
C. C. CHAPMAN	MRS. CLAUS SPRECKELS
WILLIAM WRIGLEY, JR.	JOHN T. GAFFEY
GEORGE L. EASTMAN	D. EYMAN HUFF
PAUL SHOUP	GRIFFITH HENSHAW
HENRY W. O'MELVENY	J. D. GRANT
FRANK A. MILLER	ROBERT T. DEFOREST
HERBERT FLEISHHACKER	CHARLES S. HOWARD

A few of the individuals who were listed as "Charter Members" of the Institute of Western Research were written to. These gentlemen were told that their names were being used in connection with write-ups of medicinal products. From the answers received, it would appear that probably most of the "Charter Members" knew nothing of the use to which their names were being put.

The Powell Publishing Company (which held the copyright) was written to, requesting that the letter of inquiry should be referred to the Institute. It was pointed out that as the institute was dealing with matters of medical significance, some information regarding the institute was desired and especially some data on the matter of facilities the institute might have for research work in the medical field. In due time, an answer came from the Institute of Western Research, signed "Sidney M. Haskell, Director, Department of Economics." The stationery of the Institute of Western Research, on which Mr. Haskell had written, bore what was described as a partial list of "Associate Members." This list comprised the same individuals whose names are printed as the "Charter Members of the Institute of Western Research" in the booklets—with this difference: That on the stationery there also appeared, in addition, the name of Senator James D. Phelan. With this difference the list of "Associate Members," as it appears on the institute's stationery, is identical with the list of "Charter Members" printed in the various booklets.

Mr. Haskell's letter failed to throw any light on the specific questions asked. It did state that:

> "The primary purpose of this organization is to perpetuate the record of California's romantic past and of those who have notably contributed to the upbuilding of California, and to make available the best literature created for that purpose."

Mr. Haskell also sent some additional brochures that the institute had issued. One of these was entitled, "The Story of the American Hospital Association and the Medico-Surgical Exchange"; another, "A Record of the Activities of the University of Southern California." At this point, it should be made clear that the "American Hospital Association and the Medico-Surgical Exchange" just mentioned is not in any way connected with the national organization, the American Hospital Association, but is a Los Angeles concern.

As none of the material sent threw very much light on the problem, another letter was written, in which it was asked definitely whether the Institute of Western Research had any medical men on its staff. The institute was also told that answers to the following pertinent questions would be appreciated:

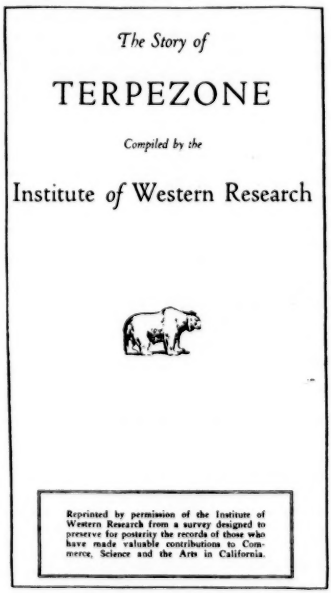
1.—Is the Institute a corporate body, and if so, who were the incorporators?

2.—Who are the officers?

3.—Who pays for such pieces of advertising as that sent out in the interests of various concerns and individuals?

4.—From what sources does the Institute receive its funds?

In due time, a reply came to this inquiry, which ignored the questions asked, but stated that the medical field was "only an incidental phase of the work." Mr. Haskell said that among such medical stories as had been issued by the Institute were those dealing with Dr. W. E. Balsinger, "plastic surgeon," the College of Osteopathic Physicians and Surgeons, and a story of Unit No. 2 of the Los Angeles General Hospital.


The Story of
TERPEZONE
Compiled by the
Institute of Western Research
Reprinted by permission of the Institute of Western Research from a survey designed to preserve for posterity the records of those who have made valuable contributions to Commerce, Science and the Arts in California.

This letter was acknowledged and regret expressed that Mr. Haskell did not see fit to answer the four questions propounded in the previous letter. The opinion was also advanced that if the Institute of Western Research was going to dabble in medical matters, it should have some one on its staff that had some medical knowledge. In closing, Mr. Haskell was asked if Dr. Balsinger, the College of Osteopathic Physicians and Surgeons and some of the other concerns and products that had been the subject of write-ups had paid for the testimonials or endorsements that had been printed, and if so, how much. This letter has remained unanswered.

Some of the other subjects that have been given publicity by the Institute of Western Research and the matter sent out in the form of booklets have been "Terpezone" and "Tarzana Mineral Water." The former was the subject of an unfavorable report by the Council on Pharmacy and Chemistry. The latter is said by the Institute of Western Research to contain "vitalizing ingredients as potent as those found in the famous mineral waters" of Europe. The analysis, which forms part of the booklet, shows that the chief "vitalizing" ingredients is glauber's salt—sodium sulphate!

Although the Institute of Western Research failed to give the American Medical Association any vital information regarding its methods, Dr. Charles B. Pinkham of the Board of Medical Examiners of California was able to learn something of interest. From a report made to the Board by one of its investigators, it appears that the Institute of Western Research is essentially a "child of the Powell Publishing Company," which is said to have for its president Harry Chandler, publisher of the Los Angeles *Times*, and for its vice-president and general manager, Sidney M. Haskell, while for its secretary, it has Arthur M. Dole, a trustee of Pomona College.

The Los Angeles "American Hospital Association and Medico-Surgical Exchange," which was the subject of one of the write-ups, is said to have admitted (through a Mr. Miller connected with it) that $175 was paid for the story and the first thousand copies of the leaflet containing it; 10,000 additional copies cost $95 more. Whether these figures represent a schedule of prices paid for all write-ups, we do not know.

The Institute of Western Research has declared that the "stories" that it prepares and issues in the form of pamphlets on institutions and individuals are in "connection with a state survey which will be published by the Powell Publishing Company supplementary to their notable nine-volume series, 'CALIFORNIA.'" The volumes, "CALIFORNIA," are said to record for posterity "the story of the state's past, its growth and development."

The possible value of this record of California, if one is to judge from some of the "stories" that have been prepared on subjects of a medical character, would seem to be seriously impaired by the lack of discrimination, to say nothing of the evidence that indicates that science, art and literature may be subordinate to economics.

Correspondence

CEREBRAL SPASTIC PARALYSIS IN CHILDREN

To the Editor:—Dr. Edwin Warner Ryerson, in his article entitled "Cerebral Spastic Paralysis in Children," which appeared in THE JOURNAL, January 2, says: "Hemorrhage is very rare in these premature infants, because the child's head is small and there is usually not enough compression of the skull during birth to cause a rupture of the longitudinal sinus or the middle meningeal artery. In these infants there may be very little spasticity at birth."

I thoroughly disagree with this statement. It is a well known fact that premature and immature babies are more susceptible to intracranial hemorrhage than full term babies. The smaller the weight at birth, the more frequent the hemorrhages. Ylppö (*Ztschr. f. Kinderh.* **20**:21, 1919; **38**:32, 1924; *Monatschr. f. Kinderh.* **34**:502, 1926) found hemorrhages in 90 per cent of the infants that weighed less than 1,000 Gm. at birth, in 76 per cent of those weighing from 1,001 to 1,500 Gm., in 35.3 per cent of those who had a birth weight from 1,501 to 2,000 Gm., and in only 26.7 per cent of those weighing from 2,001 to 2,500 Gm. Weiss (*Med. Klin.* **21**:1192 [Aug. 7] 1925) examined 507 infants weighing less than 2,500 Gm. at birth. One fifth of these that came to autopsy had intracerebral and intrameningeal hemorrhages. Cruickshank (*Lancet* **1**:836 [April 28] 1923) found hemorrhages of all types in 80 cases, or in 65.5 per cent of 200 mature and immature infants.

In my article entitled "The Fate and Development of the Immature and of the Premature Child" (*Am. J. Dis. Child.* **35**:262 (Feb.) 1928), I stated that vasolability is one of the most important predisposing causes of intracranial and other forms of hemorrhage in immature and premature infants. The blood vessels of immature as well as of premature infants are readily traumatized or torn. This is due perhaps to the lack of elastic tissue in the blood vessel walls, for the elastic tissue is the last to reach complete development, or, as Ylppö said, "to the lack of perivascular elastic tissue." Another possible cause of this vasolability of the premature infant is the persistence of the fetal state of the capillaries; that is, the archicapillaries. In fact, intracranial hemorrhages are so common in immature and premature infants that they have been seen in cases in which delivery was made by cesarean section; in those cases it seems that the mere uterine contractions were sufficient to traumatize the contents of the vasolabile infants' skulls. In the article previously referred to, I reported the examination in later life of 103 immature and premature infants, 5 of whom were suffering from Little's disease. They were infants who had suffered intracranial hemorrhage at birth. In fact, the incidence of cerebral spastic paralysis in children would be much greater than it is now were it not for the fact that many of the premature and immature infants die from the intracranial hemorrhage that they suffer at birth.

AARON CAPPER, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DETERMINATION OF BASAL METABOLIC RATE

To the Editor:—What would be the normal to use in estimating the basal metabolic rate, and what would be your estimate of the basal metabolic rate in a girl, aged 12 years, height 62¼ inches (158 cm.); actual oxygen consumption with corrections 267 cc. a minute; weight 189 pounds (85.7 Kg.), the temperature being 26 and barometric pressure 758 mm. At the beginning of an eight minute period the oxygen was 4,400 cc., and at the end, 2,100 cc., the amount per minute being 287 cc., or 283 cc. of consumption for a six minute period. We have a Sanborn Benedict apparatus, and figure the eight minute period. A recheck, made one week after the aforementioned determinations, showed weight, 186 pounds (84.4 Kg.) and actual oxygen consumption with corrections 294 cc. a minute.

F. E. SULTZMAN, M.D., Hannibal, Mo.

ANSWER.—The Du Bois standards, as modified by Boothby and Sandiford, give the figure 43.4 calories per square meter per hour as normal for females at 12 years of age. The surface area of this patient, based on height and weight and derived from a monogram prepared by Boothby and Sandiford, is 1.86 square meters. The normal basal caloric expenditure of this patient would therefore be 43.4 multiplied by 1.86, or 80.7 calories per hour.

The actual oxygen consumption of this patient was 4,400 minus 2,100, or 2,300 cc. during an eight minute period. This is equivalent to 287.5 cc. a minute, which when corrected to standard temperature and barometric pressure equals 225 cc. a minute. Reference to standard conversion tables shows that the consumption of 255 cc. of oxygen a minute is equivalent to the caloric expenditure of 73.8 calories an hour. This figure therefore represents the actual caloric expenditure of this patient under basal conditions.

The basal metabolic rate is expressed as the percentage difference between the actual and the standard caloric expenditures. The difference in this case is 80.7 minus 73.8, or 6.9, the actual figure being less than the standard. The basal metabolic rate of this patient is therefore 100 divided by 80.7, multiplied by 6.9, which equals 8.6 per cent minus.

BIREFRACTING LIPOIDS IN URINE

To the Editor:—What is the origin, significance and method of investigation of the birefracting lipoids in the urine?

ANGEL MORA GARCIA, M.D., Melilla, Morocco.

ANSWER.—The birefractive lipoid granules or masses frequently found in pathologic urines are made up of fatlike materials containing varying amounts of cholesterol esters. The property of double refraction is detected by observing these particles with a polarizing microscope. Under the ordinary microscope they may appear as fat or oil droplets, but with the polarizing microscope one usually observes instead a light maltese cross, or other design, against a dark field. This probably is due to a liquid crystalline component in the lipoid granules. The substances probably originate from various tissues and are carried by the blood, because lipoiduria usually is associated with a hypercholesterolemia. It probably is asso-

ciated with a disturbed cholesterol metabolism, but kidney injury also appears to be necessary. Lipoiduria is stated to occur in lipoid nephrosis of unknown and syphilitic origin, glomerulonephritis, amyloid nephrosis of the edema type, hypernephroma of the kidney, and lipoid carcinoma of the prostate. True lipoid nephrosis is associated with lipoiduria, marked albuminuria, hypercholesterolemia and general edema but is without hematuria and rise in blood pressure. The nonprotein nitrogen is not necessarily above normal.

PROTEIN IN GELATIN AND TAPIOCA

To the Editor:—Can you tell me what kind of protein makes up the 84 per cent protein of gelatin? Because of the amount of protein in gelatin I have been surprised to find it used in elimination diets and should like to have an explanation. I should also like to know whether tapioca contains protein. M.D.

ANSWER.—Gelatin results from the hydrolysis of collagen, which is the principal solid ingredient of white fibrous connective tissue. Collagen is a protein substance classified as an albuminoid. Gelatin is sometimes classed as an albuminoid, but it is better to consider gelatin as a protein derivative not properly belonging to any of the regular classes of proteins. Gelatin is not a satisfactory substitute for the protein constituents of a normal diet, since a certain portion of its nitrogen is not available for the uses of the body. The amino-acid content of gelatin is as follows:

Amino Acid	Per Cent
Glycine	25.50
Alanine	8.70
Serine	0.40
Valine	0.00
Leucine	2.10
Isoleucine	2.10
Phenylalanine	1.40
Tyrosine	0.01
Cystine	0.17
Tryptophan	0.00
Proline	9.50
Hydroxyproline	14.10
Aspartic acid	3.40
Glutamic acid	5.80
Hydroxyglutamic acid	0.00
Histidine	0.90
Arginine	9.10
Lysine	5.90
Methionine[2]	+
Ammonia	0.40
Total	92.38

Gelatin in elimination diets may be looked on as a protein sparer, but undoubtedly its chief purpose is to act as a physical medium for giving form and attractive appearance to fruits and vegetables mixed with it and as a carrier of added flavoring.

Tapioca starch contains a low content of protein, as illustrated in the following analysis:

	Per Cent
Water	11.4
Protein	0.4
Fat	0.1
Fiber	0.1
Carbohydrates (including fiber)	88.0
Ash	0.1

PREPARATION OF SOLUTIONS FOR LOCAL ANESTHESIA

To the Editor:—Why are the procaine-epinephrine local anesthetic solutions for hypodermic use not used with physiologic solution of sodium chloride as a vehicle? Is there any contraindication?

W. H. DEWEY, M.D., Moville, Iowa.

ANSWER.—The best solvent for procaine-epinephrine is 0.7 per cent sodium chloride solution. The reason that a 0.9 per cent or physiologic solution of sodium chloride is not used is explained by the fact that the procaine salt itself increases the salt concentration and, if it were dissolved in physiologic solution of sodium chloride, a hypertonic concentration would result. If, on the other hand, distilled water is used as a solvent (a practice frequently encountered in the best hospitals), a hypotonic solution is injected. The latter causes serious damage to the cells and, if it is injected in larger quantities, may cause tissue necrosis. Particularly the loose, fatty, subcutaneous tissue suffers from these solutions. A hard infiltration appears, which may later break down and prove to be an aseptic fat necrosis.

The injection of solutions in isotonic concentrations (that is, a solution which remains in equilibrium with tissue fluids) is a fundamental principle of infiltration anesthesia. The addition of other salts to the solution has been suggested now and then, with the purpose of intensifying the anesthetic action. However, they do not seem to be essential. The sodium chloride must be pure, and the procaine hydrochloride dissolved in the solution must not precipitate. Sterilization must be done in pyrex glass.

REACTION TO CHEMICAL IN DENATURED ALCOHOL

To the Editor:—I have a patient under my care who works with alcohol, making aniline dyes. Since the change by the government of the constituent making alcohol a nonbeverage, this patient has contracted a condition which simulates angioneurotic edema, but hemorrhages occur under the skin; examination of the blood shows hemoglobin, 59 per cent; red blood cells, 2,580,000; color index, 1.15; leukocytes, 13,000; neutrophils, 49 per cent; eosinophils, 2 per cent; basophils, 1 per cent; transitionals, 0; large lymphocytes, 2 per cent; small lymphocytes, 46 per cent. I should appreciate it if you would inform me whether similar cases have been brought to your attention and what is the constituent that the government is now using. Please omit name. M.D., New York.

ANSWER.—The denaturing of alcohol for industrial purposes is not brought about by any one agent but by several, depending on the nature of the industrial operations. The denaturant that came into wide use about Jan. 1, 1931, is alcotate, a petroleum derivative, the chemical structure of which is not fully known. Other agents include benzene, benzine, butyl and isopropyl alcohols, ether, aniline and diethylphthalate.

The clinical state described may be of nonoccupational origin or it may be due to other intermediates in dye making. Assuming that it is the result of an alcohol denaturant, benzene is to be suspected. This substance may produce subdermal hemorrhages, angiospasm, and a blood picture in all respects similar to the one indicated in the query, although the commoner white cell state is represented by a leukopenia rather than by a leukocytosis.

The content of benzene in alcohol as a denaturant may not be expected to exceed 5 per cent, but this content in large quantities of alcohol is regarded as capable of producing systemic poisoning.

Assuming that no benzene was contained as a denaturant in the alcohol employed, inquiry should be made as to the use of benzene or any homologue or compound as an intermediate in dye making. One hundred parts of benzene vapor, which represents a small amount of liquid benzene, per million parts of air is near the threshold of danger.

CONTROL OF PERSISTENT SECRETION OF MILK

To the Editor:—Six years ago a primigravida, now 41 years of age, gave birth to a full term normal child. Delivery was accomplished by forceps and was followed by a severe hemorrhage. Despite the hemorrhage, the woman had plenty of milk for the child and nursed him a number of months. Following his weaning, one breast has continued to secrete what appears to be milk, and this still runs from the nipple at times in such an amount that the woman is forced to wear a protecting pad. There has been no subsequent pregnancy. Physical examination made by a number of physicians is said to have revealed nothing noteworthy, either in the breast or elsewhere. Will you kindly suggest possible causes and any treatment beyond that mentioned by De Lee in his discussion of galactorrhea? Please omit name. M.D., New Mexico.

ANSWER.—M. J. Seifert reviews the literature up to 1920. Cameron, Ronnefeldt and others report cases but do not give many hints for treatment. Ronnefeldt mentions the use of spirit of camphor, 15 drops three times a day, which seems to have been curative. Cameron used x-rays, producing immediate results with two treatments; three months later, however, the disease recurred.

Since there are so few cases of this disease in the literature, it would be highly desirable for the inquirer to send the milk to a chemical laboratory for a thorough investigation and to try, experimentally, the various newer endocrines, theelin, anterior lobe of pituitary, and even mammary and corpus luteum extracts, as much with the idea of investigation as for an attempt to cure. Following these, the x-rays might be used.

Possibly, mental treatment might be instituted. It is a known fact that a mental shock will "drive away the milk or alter the quality of the milk." Suggestive treatment is not dangerous and might be tried in addition to firm compression of the breasts for from twenty-four to thirty-six hours.

PARTIAL AGNOSIA

To the Editor:—What information can you give me in regard to the following case: A boy, aged 11 years, mentally normal, knows his letters separately and is able to add, subtract, but is unable to group his letters, so that it is impossible for him to read the first grade study books. The tundi are normal, and a mild hyperopic astigmatism is present. Please omit name. M.D., Michigan.

ANSWER.—The boy apparently has some form of partial agnosia, which cannot be more exactly specified from the facts given. In order to reach a diagnosis of the exact nature of the disability and to prescribe remedial methods of training, it is essential that a detailed study be made of all functions that enter into the understanding of written speech. This should be undertaken by a competent neurologist.

ROCHE'S EMBROCATION

To the Editor:—I am interested in the composition and claimed therapeutic value of "Roche's Embrocation." The index to my volume II of "Nostrums and Quackery" indicates that it is discussed in volume I. I have no copy of volume I and understand that it is not available.

C. C., M.D., Pennsylvania.

ANSWER.—According to a British book of formulas, Roche's Embrocation was given a patent in 1803 and the patent specifications showed the following ingredients:

"Oil of elder	1 gallon
"Red rose leaves	2 ounces
"Chamomile flowers	2 ounces
"Oil of caraway	3 ounces
"Oil of rosemary	½ ounce
"Powder of cochineal	6 grains
"Alkanet root	2 ounces"

The instructions were that these ingredients were simmered over a slow fire for twenty-four hours, pressed and strained, the liquid being the finished product. According to the *Druggists Circular,* the traditional imitation of Roche's Embrocation is:

"Oil of amber	½ ounce
"Oil of cloves	½ ounce
"Olive oil	1 ounce"

The London *Lancet* for Feb. 2, 1924, published a list of "patent medicines" that were being sold in Italy, in which country it was necessary to give the formula on the label. The *Lancet* published a list of a number of British and American "patent medicines" that were being sold at that time in Italy, and among them was Roche's Embrocation. According to the label of this product, sold at that time and in that place, it contained:

"Ol. caryophyll., Ol. succini., Ol. limon. of each, 15; Ol. olivae, 55." (Quantities in Gm. or cc.)

According to a brief paragraph published in Nostrums and Quackery, volume I, it was stated that the exact composition of Roche's Embrocation was not known, but that from published formulas it appears to have been prepared by digesting a fatty oil with asafetida. It then gave two formulas: "Coarsely powdered asafetida and alkanet, each 5.0 Gm. (75 grains), are digested with olive oil, 180 Gm. (6 fluidounces), during eight days and then filtered. To the clear filtrate are added oil of caraway, oil of turpentine, each 9.0 Gm. (2.25 fluidrachms), oil of pine needles, 1.2 Gm. (18 minims), and oil of bergamot, 0.8 Gm. (12 minims). Another published formula directs that 2.5 Gm. (38 grains) asafetida be digested for a few hours with 60 Gm. (2 ounces) olive oil; the clear oil is decanted and mixed with 2 Gm. (30 minims) each of oil of caraway and oil of turpentine, and a few drops of oil of bergamot."

TREATMENT OF SCLEROSIS OF CORD WITH ARTIFICIAL PYREXIA

To the Editor:—I have a woman patient, aged 48, who has progressive sclerosis of the cord with ataxia and hyperesthesia of four months' standing. An exhaustive clinical examination has been made, but no causative factor has been determined. The blood and spinal fluid are normal. I have been advised to try artificial fever, using malarial infection, to hinder progression of this disease. In your opinion, is this treatment indicated? M.D., Oregon.

ANSWER.—From the description given, some doubt exists as to just what disease the patient has. One might assume that the case is one of multiple sclerosis although, of course, one might also be dealing with a combined sclerosis. If it can be assumed that this is a case of bona fide multiple sclerosis, fever therapy might be used. The only remedies that offer any hope of arresting this disease are intravenous injections of arsenicals, or hyperpyrexia. Since it is rather dangerous to inoculate any one with malaria, some of the newer methods of producing fever artificially might be tried. Certain investigators have observed good results after the injection of foreign proteins and especially after treatment with diathermy. Since multiple sclerosis is a chronic and progressive disease, it would not seem to be too radical to institute such treatment.

GRANULOMA INGUINALE

To the Editor:—I have a case of granuloma inguinale recently healed with antimony and potassium tartrate and roentgen treatments. Does this recur, or shall I expect permanent results?

E. D. COVINGTON, M.D., Murray, Ky.

ANSWER.—Granuloma inguinale is prone to recur even after healing has apparently been completed. Permanent results are often obtained, however, if one persists in treatment.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, March 1. Sec., Dr. Harry C. DeVighne, Juneau.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, March 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, Feb. 13. Prerequisite to license examination. Address, State Board of Healing Arts, 1895 Yale Station, New Haven. *Homeopathic.* New Haven, March 8. Sec., Dr. Edwin C. M. Hall, 82 Grand Avenue, New Haven. *Regular.* Hartford, March 9-10. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

MAINE: Portland, March 8-9. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, March 8-10. Sec., Dr. Stephen Rushmore, 144 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: Examinations will be held in cities where there are five or more candidates, Feb. 24-26. Ex. Sec., Mr. Everett S. Elwood, 225 South Fifteenth St., Philadelphia.

NEW HAMPSHIRE: Concord, March 10-11. Sec., Dr. Charles Duncan, Concord.

OKLAHOMA: Oklahoma City, March 9-10. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, March 1. Sec., Dr. A. Ortiz Romeu, Diaz Garcia Clinic, San Juan.

VERMONT: Burlington, Feb. 9-11. Sec., Dr. W. Scott Nay, Underhill.

California Reciprocity Report

Dr. Charles B. Pinkham, secretary, California Board of Medical Examiners, reports thirteen physicians licensed by reciprocity with other states from Sept. 24 to Oct. 29, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
American College of Medicine and Surgery, Chicago		(1906)	Illinois
Chicago College of Medicine and Surgery		(1907), (1917)	Illinois
Rush Medical College		(1916)	Minnesota
State University of Iowa College of Medicine		(1887)	Iowa
Medical Department of Hamlin University, Minnesota		(1906)	Minnesota
University Medical College of Kansas City, Mo.		(1904)	Kansas, (1912) Arizona
John A. Creighton Medical College		(1917)	Nebraska
University and Bellevue Hospital Medical College		(1905)	New York
Miami Medical College, Cincinnati		(1878)	Iowa
University of Pennsylvania Department of Medicine		(1908)	Penna.
Baylor University College of Medicine		(1918)	Texas

New Hampshire September Report

Dr. Charles Duncan, secretary, New Hampshire Board of Registration in Medicine, reports the oral and written examination held at Concord, Sept. 12-13, 1931. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. Twelve physicians were licensed by reciprocity with other states and six physicians were licensed by endorsement. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Boston University School of Medicine		(1930) 78, (1931) 79.8,	91
McGill University Faculty of Medicine		(1917)	75

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Boston University School of Medicine		(1907)	Mass.
Harvard University Medical School		(1892)	Mass., (1925) West Virginia, (1931) Vermont
Tufts College Med. School		(1913), (1922), (1927), (1930)	Mass.
University of Pennsylvania School of Medicine		(1926)	Minnesota
University of Vermont College of Medicine		(1921)	Mass., (1930) Vermont
McGill University Faculty of Medicine		(1927)	Vermont

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School		(1928), (1930, 2)	N. B. M. Ex.
Tufts College Medical School		(1930)	N. B. M. Ex.
University of Vermont College of Medicine		(1929), (1930)	N. B. M. Ex.

Rhode Island July Examination

Dr. Lester A. Round, director, Rhode Island State Public Health Commission, reports the written and practical examination held at Providence, July 2-3, 1931. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Ten candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1931)	90.4*
Georgetown University School of Medicine		(1931)	84
State University of Iowa College of Medicine		(1925)	86.7

University of Maryland School of Medicine and College of Physicians and Surgeons	(1929)	86.8
Boston University School of Medicine	(1931)	87.2*
Tufts College Medical School	(1931)	84.8,* 90.8*
Kansas City Medical College, Missouri	(1896)	89
Jefferson Medical College of Philadelphia	(1931)	85*
University of Vermont College of Medicine	(1930)	86.7

* The licenses of these applicants are being withheld pending completion of an internship.

Book Notices

Nelson Loose-Leaf Living Medicine. Prepared Under the Direction of an International Advisory Board by the World's Leading Medical Authorities. Editor-in-Chief, W. W. Herrick, B.A., M.D., Associate Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University. Renewal pages for volumes I to VI, including index. Paper. New York: Thomas Nelson & Sons, 1931.

The beginning of 1932 reveals the adoption of a new system of publication of the inserts for this well established encyclopedia. It is planned to issue the new material at regular intervals. A survey of the inserts now ready indicates an attempt to keep abreast of new studies in many fields in which significant work has been done in recent years. The section on rheumatic fever by Homer F. Swift records research of importance; undulant fever is covered by Richard P. Strong, the suprarenal glands by Thomas P. Sprunt and the Aschheim-Zondek test by Alvin J. B. Tillman. Dr. Paul D. White provides a complete revision of diseases of the circulatory system, and James P. O'Hare writes on the diseases of the kidney. The two latter sections include more than 500 new pages with fine electrocardiographic reproductions. There are also contributions to the subjects of diseases of the bones and of the nervous system. The effort to keep this well established encyclopedia up to date is commendable and the publishers have chosen wisely in the contributors who make the revisions and the new contributions.

The Specific Treatment of Human Schistosomiasis (Bilharziasis) with Special Reference to Its Application on a Large Scale. By Mohammed Bey Khalil, Ph.D., M.D., M.R.C.P., Professor of Parasitology, Faculty of Medicine, Cairo (Egypt). With Notes: „Über Fuadin (Neo-Antimosan)." von Dr. Hans Schmidt: "The Physiological Action of the Antimosan Compounds," by Dr. M. M. Hammouda; „Über die Beeinflussung des Blutkreislaufes durch einige Antimonpräparate", von Dr. H. Weese. Beiheft zum Archiv für Schiffs- und Tropen-Hygiene, Pathologie und Therapie exotischer Krankheiten, Band XXXV, Nr. 2. Paper. Price, 5.60 marks. Pp. 128, with 13 illustrations. Leipzig: Johann Ambrosius Barth, 1931.

In this treatise special attention is given to the treatment of schistosomiasis as carried out in the traveling and stationary hospitals in Egypt, and to research work on the various drugs done in the public health department of Egypt and in the parasitology department of the Faculty of Medicine. The bibliography is complete and is one of the most valuable parts of the work. An historical review of the nonspecific treatment of the disease is given. The use of emetine—both the hydrochloride and the acetylamine oxyphenilarsinate—is discussed. While the former is a specific drug for therapeusis of schistosomiasis, its use in the anthelmintic hospitals of Egypt is limited to children and fat patients, to complication with amebic dysentery, and to cases wherein there is intolerance to antimony and potassium tartrate or to antimony compounds. The latter drug, called Arsemetine Clin, is shown to be more toxic than the hydrochloride and unpromising for use in human cases.

Of the simpler antimony compounds, antimony and potassium tartrate (tartar emetic) was preferred to sodium antimony tartrate because of its greater stability, smaller cost and yet equal efficacy. The course of treatment consisted of intravenous injections on alternate days for four weeks of 0.13 Gm. (2 grains) except for the first three doses, which were 0.03, 0.065 and 0.1 Gm. (one-half, 1 and 1½ grains). The course is terminated after the disapearance of living ova from the excreta as determined microscopically. The commonest symptoms following administration of the drug were: cough, 10 per cent; nausea, 1.6 per cent, and vomiting, 3.8 per cent. Sudden death resulted in 6 out of 180,661 cases treated. It is believed, however, that the real death rate may be about 0.5 per thousand cases finishing treatment. It was found to be inadvisable to treat chronic cases in which living ova were not being discharged. An analysis of 1,000 cases of schistosomiasis treated intravenously with antimony and potassium tartrate showed that of those receiving a complete course of treatment 89.4 per cent were cured. About 68.3 per cent were cured after receiving twelve injections.

Of the more complex antimony compounds, stibenyl, neostibosan and Dn 6 were not used in human cases. Stibosan was used only in two cases, only one of which was cured. Nineteen patients were treated with Sb 212, fourteen of whom were cured and one died. Old-antimosan was found to be as effective in curing schistosomiasis as antimony and potassium tartrate, and less toxic than this drug. In about half of the cases it produced bradycardia and slight reduction in blood pressure. Out of fifty-five cases there was one death, and two patients showed symptoms of intolerance. Fouadin was found to possess certain advantages over antimony and potassium tartrate. The duration of treatment was ten days less than that with antimony and potassium tartrate. It produced no local complications as the result of injection. Of 686 cases treated with fouadin, 92.7 per cent were cured, as compared with 86.6 per cent of cures effected with antimony and potassium tartrate in 432 cases. On the other hand, fouadin is much more expensive than antimony and potassium tartrate and may cause bradycardia. The results from antimony sodium thioglycollate and antimony thioglycollamide were inconclusive, but these drugs seem to deserve further study. The use of Neostam (stibamine glucoside) showed no advantages over the use of antimony and potassium tartrate but had the disadvantage of requiring more injections. The work that was done with Cuprotartre did not show any advantage of this drug over antimony and potassium tartrate.

A study of the excretion of antimony from the human body showed that this substance is cumulative, being slowly excreted. The amount excreted in the stools was from 2.3 to 4.6 per cent of the amount injected and this excretion did not continue to completion. The principal organ of excretion was found to be the kidney. There was no excretion of antimony by way of the skin, sputum or milk.

Simplified Diabetic Management. By Joseph T. Beardwood, Jr., A.B., M.D., F.A.C.P., Chief of Diabetic Clinic and Associate Visiting Physician, Presbyterian Hospital in Philadelphia, and Herbert T. Kelly, M.D., A.A.C.P., Associate in Diabetic Clinic, Presbyterian Hospital in Philadelphia. Diets prepared with the collaboration of Elsie M. Watts, A.B. Cloth. Price, $1.50. Pp. 191, with 7 illustrations. Philadelphia: J. B. Lippincott Company, 1931.

This volume is intended for both the diabetic patient and the practicing physician. The first chapter, devoted chiefly to the patient, might aptly be captioned "What Every Diabetic Patient Should Know" and resembles similar chapters in other diabetes manuals. The third and last chapter contains tables of food values, specimen diets and recipes. The second chapter, which is of especial interest to the physician, deals chiefly with a system of diet calculation based on the "line-ration scheme" of Lawrence for patients with diabetes and a similar one of Christian and O'Hara for patients with nephritis. The authors have elaborated this system into a chart from which one may quickly obtain the carbohydrate-protein-fat distribution of a given number of calories. This in turn may be readily translated into "food units." The latter are given in three tables and are the portions of food which are equivalent to:

Unit A—5 Gm. carbohydrate and 1 Gm. protein	(24 calories)
Unit B—5 Gm. protein and 10 Gm. fat	(110 calories)
Unit C (A and B)—5 Gm. carbohydrate, 6 Gm. protein and 10 Gm. fat	(134 calories)

The chart indicates the appropriate number of each of these units which make up a diet of a given number of calories, within a limited variation of carbohydrate, protein and fat. This system is without doubt labor saving and has much to recommend it to the many physicians who have no trained dietitian at their disposal. However, like all systems, it may lead to the standardization of treatment of all patients, without regard for their individual needs. The chart must necessarily be limited in size and is accordingly limited in its range of calory distribution. Consequently, it would not be of much use to the physician whose ideas on the proper distribution of carbohydrate, proteins and fat in the diabetic diet differ very much from those of the authors.

Bendien's Diagnostic Methods for Cancer and Principles of Treatment. By A. A. Miller, M.D. With an Introduction by Dr. S. G. T. Bendien. Cloth. Price, 3s. 6d. Pp. 79, with 9 illustrations. London: H. K. Lewis & Company, Ltd., 1931.

The author reflects Dr. Bendien's views and theories on cancer, emphasizing the necessity of two factors in the development of malignant disease: an exogenous factor (chronic irritation) and an endogenous factor in the form of cancer susceptibility. The existence of an immunizing factor is believed to counteract the development of cancer. In Bendien's flocculation test the precipitate consists of (1) a special thermostable protein formed as the result of cancer metabolism and (2) a protein which dissolves when heated to 56 C. for thirty minutes (normallabilin). Bendien's test consists of precipitation of the blood serum, optical examination of the precipitate and observing the nature of the colloidal charge of the serum protein. The test is described in detail. Normallabilin is believed to have a profound influence on the cancer process. Its quantity can be measured. Unlike antitoxin, it is not regarded as specific. Its presence indicates a resistance against the pathologic process and its concentration is said to be related to the degree of malignancy of the tumor. As to the specificity and accuracy of the test, the author states that "for the sake of clearness no mention has been made of certain other pathological conditions which may also flocculate below tube No. 6 (the zone of flocculation for cancer sera)." Obviously, this is precisely the control that is needed. In the treatment of cancer an attempt is made to increase the amount of normallabilin in the blood. As soon as the increase has taken place, as evidenced by the serologic test, it is stated that the general condition improves and the symptoms begin to subside. As a treatise proposing a new diagnostic test for cancer and an effective constitutional therapeutic agent, the work lacks rigid and critical scientific control and is utterly unconvincing.

Medicolegal

Hospitals: Duty to Furnish Competent Nurses.—The plaintiff had been a patient in a private hospital operated by the defendant. After the surgical removal of her tonsils, lung abscesses developed. She alleged negligence on the part of the defendant and brought suit. The essence of the evidence was that, while the plaintiff was unconscious, threshing about in bed, at times sitting upright, she vomited blood, gasped for breath, coughed more or less, and blood oozed from her mouth. It was conceded that infected blood was insufflated into her lungs, and that infected blood breathed into the lungs is a cause of lung abscesses. Coughing and struggling to obtain air in the postoperative period is regarded by medical men as persuasive evidence that at those times blood is entering the bronchial tubes. During most of the time the patient was in the position described, no attendant was present. The defendant admitted that she usually gave the patients brought to her hospital her personal services, but she denied that she held herself out as providing skilled nurses for patients of various physicians in attendance there. The attendant supplied by the defendant had been in her employ for several weeks only, had had no experience in any other hospital, and had had no training as a nurse. Her knowledge of how to care for a patient recovering from a tonsil operation had been acquired while she observed seven or eight previous tonsillectomies in the defendant's hospital. While she was caring for the plaintiff, she also busied herself with the task of cleaning some surgical appliances. The only other person present when the plaintiff was recovering consciousness was her husband. He testified that the attendant was absent from the room and that he sought two or three times to locate her, without success; that, on the two occasions when she entered the room, she remained for only a moment and did nothing more than change the bed sheet. All witnesses agreed that while the patient is recovering consciousness a competent nurse should be in attendance and should keep the patient on her side, with her head in such a low position that the blood and mucus will run out of her mouth. Since the plaintiff's husband testified that the attendant made no effort whatever to keep the patient in such a position, the jury was warranted in concluding that the defendant was negligent. A judgment in favor of the plaintiff, for $2,500, was affirmed.—*Goldfoot v. Lofgren (Ore.), 296 P. 843.*

Drunkenness as Affecting the Admissibility and the Weight of a Confession.—The defendant had been convicted of murder in the first degree. He testified that after the shooting and before his arrest he drank a pint and three gills of whisky. Police officers testified that when he made his confession to them he was "partially under the influence of intoxicating liquor"; that is, "you could detect the odor of liquor on his breath" and "his speech was sort of thick." They testified further, however, that while "he showed indications of having been drinking . . . he had his mental faculties and knew what he was about"; that he "was not drunk, but showed plainly that he had been drinking." One of the police officers was asked, "In your opinion, if he had been operating an automobile would he have been under the influence of liquor to such an extent that you would have arrested him?" to which he answered, "If my attention was brought directly to the man it may be possible he would be arrested for operating an automobile while drunk." The evidence, said the Court of Appeals of the District of Columbia, fails to disclose such an extreme degree of intoxication as to render the confession inadmissible. The rule of law seems to be well settled, said the court, citing authorities, that the drunken condition of an accused when making a confession, unless such drunkenness goes to the extent of mania, does not affect the admissibility in evidence of such confession but may affect its weight and credibility with the jury.—*Bell v. United States (D. C.), 47 Fed. (2d) 438.*

Privileged Communications: Inference Permissible from Assertion of Privilege.—The Peoria Life Insurance Company brought an action to set aside and void a policy issued by it on the life of one Smith, on the ground that it was obtained through the fraudulent concealment of material facts. Smith had been an inmate of a tuberculosis sanatorium shortly before and shortly after the policy was issued. He was not produced as a witness; it was represented that he was too ill to come into court to testify. No effort was made, however, to take his deposition. Physicians and hospital authorities might have been able to refute the inference that Smith's presence in the sanatorium was for treatment for tuberculosis, but none was produced, and all proffers of their evidence by the plaintiff were resisted on the ground of privilege. There was no doubt, said the United States district court, eastern district, Michigan, southern division, that the failure to produce witnesses who had knowledge of material facts justified the inference that their testimony would have been adverse if they had been produced. While it was open, too, to the defendant to assert his privilege of secrecy as to the testimony of physicians, nurses and others, his sealing of such evidence by the assertion of that privilege did not, under any rule of law known to the court, prevent the drawing of the inference that such evidence, if the privilege had been waived, would support the conclusions that were arrived at from the presence of the defendant for a substantial period in an institution for the treatment of tuberculosis. A suggestion made on behalf of the defendant that his presence at the tuberculosis sanatorium was for the purpose of observation and not treatment seemed hardly persuasive, since it is a matter of common knowledge, now possessed by all intelligent persons, that not only the roentgen ray, but the tuberculin test and perhaps other tests, will disclose rather promptly to competent physicians the existence of active tuberculous infection. —*Peoria Life Ins. Co. v. Smith (Mich.), 47 Fed. (2d) 279.*

Insanity: Criteria of Criminal Responsibility.—In order to overcome the presumption of sanity and sustain the burden of proof on that issue, it must be made to appear that the defendant, when the act was committed, was so deranged and diseased mentally that he was not conscious of the nature and quality of the act and of its wrongfulness. Even though he may be mentally abnormal or defective, or may suffer from some nervous disorder, he is, under the law of California, held to full responsibility for his acts, unless the evidence brings him within the strict legal meaning of insanity.—*People v. Keaton (Calif.), 296 P. 609.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, New York, March 24-26. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Philadelphia, March 24-25. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Ohio, Secretary.

Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, February 15-16. Dr. William D. Cutter, Secretary, Council on Medical Education and Hospitals, 535 North Dearborn St., Chicago.

Mid-South Post-Graduate Medical Association, Memphis, Tenn., February 9-12. Dr. A. F. Cooper, Bank of Commerce Building, Memphis, Secretary.

Pacific Coast Surgical Association, Santa Barbara, Calif., February 25-27. Dr. E. L. Gilcreest, 384 Post St., San Francisco, Secretary.

SOUTHERN SURGICAL ASSOCIATION

Forty-Fourth Annual Session, held at White Sulphur Springs, W. Va., Dec. 8-10, 1931

(Concluded from page 346)

Appendicitis in Pregnancy

DR. WILLIAM B. MARBURY, Washington, D. C.: Every pregnant woman should be questioned concerning abdominal discomfort with especial reference to the appendix. In doubtful chronic cases a barium meal followed by roentgen therapy is helpful. In nonsuppurative cases, during the first six months the outlook for both mother and child is excellent. After this, the mortality increases directly as the duration in months of the pregnancy and the duration in hours of the appendicitis. Pregnancy is not an etiologic factor in primary appendicitis but tends to cause recurrences when pathologic changes already exist. The motion of the infant and the sag of the pendulous uterus are definite obstacles to the formation of adhesions and partially account for the frequency of generalized peritonitis. Early operation is the greatest factor in lowering the mortality. Too much dependence cannot be placed on a moderate temperature and leukocyte count, as these may give a false sense of security. A careful history, especially with reference to previous attacks, is of inestimable aid. The direct approach through a muscle-splitting incision is advocated in nonsuppurative cases. In the presence of generalized peritonitis a cesarean section should be done, followed by the removal of the uterus, as in the Porro operation. Of 364 cases of appendicitis in pregnancy occurring since 1908, 34 occurred during the last three months.

Vaginal Ureterolithotomy

DR. H. DAWSON FURNISS, New York: Vaginal ureterolithotomy has many advantages. The technic is easier than that of the abdominal operation. In its performance I feel that an orderly methodical technic of exposing the ureter is preferable to cutting down on the stone as located by palpation. There is practically no shock, and the dangers of peritonitis, wound infection and hernia are eliminated. Ureteral fistulas have not followed. Convalescence is short, from six to seven days in bed being sufficient, and almost painless except when the Schuchard incision is necessary.

Rupture of the Kidney: Report of a Case of Complete Rupture

DR. GEORGE R. LIVERMORE, Memphis, Tenn.: W. C., a white man, aged 24, had severe pain in the right loin and hematuria. Four hours before entering the hospital, he jacked up his automobile and crawled under it; the jack slipped and the car fell on him. He was pinioned under the car for about five minutes. Shortly after being released, he began to void bloody urine. He was nauseated but did not vomit. The pulse was 120, weak and thready; the patient was in shock, was restless and had severe pain in the right loin. There was a tender mass in the right upper quadrant and marked rigidity of the muscles. The blood count showed red cells, 4,450,000; leukocytes, 9,500; polymorphonuclears, 76 per cent, and hemoglobin, 85 per cent. The diagnosis of rupture of the kidney was apparent. Immediate operation was advised. The perirenal space was found filled with blood and clots, and the kidney was torn completely in half, the upper pole being entirely separated from the lower pole. The kidney was removed; 500 cc. of saline solution was given intravenously while the incision was being closed. The patient made an uneventful recovery, voiding 21 ounces of urine in the first twenty-four hours following operation, and normal amounts thereafter.

New Method of Straightening the Penis in Hypospadias

DR. FRANCIS R. HAGNER, Washington, D. C.: I heard Colonel Kellar, at Walter Reed Hospital, read a paper on the use of tunnel grafts to overcome cicatricial contractures in other portions of the body. I concluded that the use of this graft was the solution in overcoming the contracture and consequent incurvation in hypospadias. I have followed almost identically his technic. A graft, including all the layers of the skin, is cut from the inner side of the thigh and placed in salt solution. A cannula is then thrust through the corpora cavernosa, care being taken to place it above the line of the fibrous tissue that causes the chordee. The cannula that I use is a 17 French, but the size can be varied to accord with that of the penis. After the cannula is inserted, a backward-and-forward motion is made to enlarge the punctured wound. The cannula is then withdrawn; the skin graft, previously mentioned, is placed around it, with the skin side next to the instrument, and two or three fine catgut sutures are used to bring the edges together. The cannula carrying the graft is then reintroduced through the puncture, and the graft is slipped off, two fine catgut sutures being placed at the ends to hold it in position. Two of these grafts are usually sufficient, a succeeding one, if necessary, being placed in the same manner, and the punctures being made about 2 cm. apart. The urine is drained by a retention catheter in the opening of the perineal or the scrotal urethra, and a sterile dressing is then applied. Rapid healing of the grafts takes place. At the end of two or three weeks a grooved director is passed through the graft and incised from within outward to the surface of the skin. Slight bleeding occurs, but it can readily be controlled by pressure. The graft tends to flatten out as soon as the incision is made, but after a month or six weeks the grafted area can be noted only by the difference in the appearance of the skin, while palpation at the base of the graft does not show any tendency to the formation of scar tissue.

Treatment of Depressed Fractures of the Vault

DR. C. C. COLEMAN, Richmond, Va.: In a series of hospital patients that my associates and I have treated for head injuries there were 531 fractures of the skull, of which 88, or 16.5 per cent, were listed as depressed fractures of the vault. Thirteen patients in the depressed fracture group died, a mortality of 14.7 per cent. The treatment of these injuries presents the most important problems engaging the attention of neurosurgeons. Some of these problems are best met by nonintervention and some by cranial operations to offset pressure or prevent infection; but regardless of the treatment adopted, all cases of craniocerebral injury require intelligent study. It is not usually possible to determine before operation whether spiculation of the internal table with piercing of the brain has occurred. Operation is advisable to determine the amount of injury to the brain as well as to employ such measures as will tend to diminish scar formation and avert epilepsy. The principles of treatment to prevent infection in depressed fractures of the vault should be extended to apply to certain compound fractures of the base which involve the accessory sinuses or mastoid. The escape of cerebrospinal fluid from the nose or the discovery of air within the meninges is proof of a persisting compound fracture through the mucous membrane. A communication between the accessory sinuses and the meningeal spaces is not infrequent in fractures of the anterior fossa, and they heal spontaneously. Should the leak persist, with or without pneumocephalus, operation should be done to close the leak, by suture, muscle grafts or fascia lata.

Spontaneous Cerebral Hemorrhage

DR. CHARLES BAGLEY, JR., Baltimore: My purpose in this paper is to describe four types of spontaneous hemorrhage classified according to the clinical and postmortem observations in twenty cases and to outline the surgical treatment of the types which can be benefited by lumbar puncture or operation.

The great problem lies in the correct diagnosis so that the occasional surgical cases may be picked from the large group of apoplexies. The selection of cases can be facilitated by dividing them into types based on the clinical observation, so as to be of service at the bedside. One must first differentiate between the meningeal and the intracerebral type of bleeding, and these two groups must be divided again, the meningeal group according to whether there is a small or a large amount of blood in the cerebrospinal fluid and the intracerebral according to the location of the clot; that is, whether it is near the surface or deep in the substance, causing irreparable destruction which will only be increased by surgical attack. The grouping is based chiefly on the symptomatology of meningeal irritation in the meningeal bleeding and the signs and symptoms of increased intracranial pressure in intracerebral bleeding. The specimens of the fatal cases have been studied and through serial sections the ruptured vessels have been found. Spontaneous cerebral bleeding is of relatively common occurrence and may be found in children and adults of any age.

How Much Thyroid Tissue Should Be Removed for Toxic Goiter?

DR. FRANK H. LAHEY, Boston: Because of the needs for thyroid secretion in development, care must be exercised in thyroidectomy for hyperthyroidism in children that too much thyroid tissue is not removed and myxedema produced. Owing to the relative inactivity of the thyroid in elderly patients, care must be exercised lest radical thyroidectomy produce a high percentage of myxedema in such patients. Good sized remnants of thyroid tissue must be left after subtotal thyroidectomy when, following the preoperative administration of iodine, marked involution of the gland has occurred. Radical removals of thyroid tissue must be done and but small remnants left in patients with uninvoluted thyroids if one wishes to produce cures in patients with this type of uninvoluted thyroid gland. Good sized remnants of thyroid tissue must be left in subtotal thyroidectomy for hyperthyroidism associated with hyperinvolution or multiple colloid adenomatous goiter. Complete removal of the isthmus of the thyroid and baring of the trachea do not produce any disturbing amount of postoperative tracheitis. Attempts to leave segments of the thyroid isthmus over the trachea make one tend to leave too large remnants of thyroid tissue, particularly in primary hyperthyroidism. Complete removal of the thyroid isthmus with premeditated baring of the trachea and with extensive removal of thyroid tissue from the lateral lobes of the thyroid leaves a safe amount of thyroid tissue over the recurrent laryngeal nerve and the parathyroid bodies, and makes possible the radical removals of thyroid tissue that are often necessary to bring about lasting cures in hyperthyroidism.

Retroperitoneal Approach in Subphrenic Abscess

DR. CHARLES W. FLYNN, Dallas, Texas: In studying subphrenic abscess I have considered the disease from the standpoint of anatomic relationships, pathology, diagnosis and treatment, especially by operation through the extraperitoneal route, and have analyzed the etiologic factors in a group of 346 cases treated by sixty-one surgeons. Two cases were treated successfully by the extraperitoneal operation. In 313 cases treated by transpleural, transperitoneal and extraperitoneal operations, 87 deaths occurred. Transpleural or transperitoneal operations were performed in 275 cases (80 deaths) and extraperitoneal operations in 38 cases (7 deaths).

Pulmonary Abscess

DR. L. WALLACE FRANK, Louisville, Ky.: In the diagnosis and treatment of pulmonary suppurations there should be close cooperation between the internist, the bronchoscopist, the roentgenologist and the surgeon. Frequent consultations are necessary, and a carefully outlined regimen must be followed. Many cases may be cured without surgery, but there is still a large proportion (from 25 to 35 per cent) that must be operatively drained externally. The value of McNeill's roentgen technic should be emphasized in the differentiation of interlobar and intrapulmonary pathology. Lastly I wish to stress the large number of lung abscesses that follow operation. I believe that, with careful preoperative attention to infections about the teeth and the mouth, many of these abscesses can be prevented.

Deep Roentgen-Ray Burns, with a Note on Burns Caused by Radium

DR. JOHN STAIGE DAVIS, Baltimore: Deep roentgen-ray burns occur much too frequently, and the danger of causing such burns should be stressed rather than minimized. The destructive powers of roentgen rays and radium are great and must be considered as well as their curative powers. There is no question that, therapeutically at least, these agents should be used only by experts and even then with the utmost caution. Early and wide excision of deep burns caused by roentgen rays or radium with closure of the defect thus made by tissue shifting promises more surely than any other method yet devised the elimination of pain, an excellent prospect of permanent healing, and in many instances the restoration of function. In addition it gives a reasonable assurance of safety from subsequent malignant degeneration.

A Study of Cancer of the Breast

DR. ROY D. MCCLURE, Detroit: The greatest hope for improvement in treatment of cancer of the breast in the immediate future lies in the further education of all women, as has so well been started by the American Society for the Control of Cancer. As patients come earlier, both the clinicians and the pathologists must learn a pretextbook picture of cancer, in order to be sure of the diagnosis. The formation of a cancer clinic gives an added stimulus to the work and increases the knowledge of all concerned relative to the diagnosis and treatment of cancer. The statistical studies are not disheartening if one sees what fine results are obtained with the early cases and sees that the early case group is increasing as education of women is increasing.

Diagnosis and Treatment of Malignant Conditions of the Tonsils

DR. CURTIS F. BURNAM, Baltimore: The diagnosis and treatment of malignant conditions of the tonsils present problems quite similar to those of neoplasms of the posterior surface of the tongue, pharynx and nasopharynx. The tumors are similar in their histologic appearance, in the difficulty of diagnosis, in their clinical courses, and in the general impossibility of adequate surgical treatment. The disease is comparatively rare; nevertheless, the reported cases are rapidly increasing. As with the other locations in the mouth, males are decidedly more frequently affected than females. In the series under consideration, 128 to 37 represents the relative occurrence. The proportion of sarcomas is much greater in early life. The commonest age is after 40 years for the carcinomas. Of our entire material, 139 cases developed after 40 years of age. It has been impossible to estimate the influence of chronic infection as a cause. Syphilis does not seem to be an important etiologic factor but is of importance from the standpoints of prognosis and treatment. In general, the progress of the disease is rapid. The occurrence of a tumor interfering with speech or with swallowing, or causing pain, would seem to make medical consultation at an early date very likely. In our 165 cases there was, nevertheless, already marked gland involvement in 116 cases (70.3 per cent). Many of these patients had been under medical care for several months. A positive Wassermann reaction has in a number of cases led to antisyphilitic treatment for a long period before a positive microscopic diagnosis has cleared the situation. As with cancer elsewhere, it is evident that the percentage of cures depends on the extent of the trouble, and that every effort should be made to get patients in for treatment early. It should also be kept in mind that the prognosis and the treatment itself depend on the type of malignancy, and that, if radiation is employed, it should be carried to a dosage far beyond that necessary to cause a primary recession, or disappearance, of the growth. It should help to realize that a tonsil cancer, especially if it is of high grade malignancy, possibly may be cured even when there is extensive involvement of the gland. Surgeons should take up radiation as a new surgical instrument; they should not consider it as something opposed to surgery but as a valuable addition to their armamentarium.

Traumatic Rupture of the Diaphragm with Herniation of the Stomach into the Thorax

DR. CHARLES REID EDWARDS, Baltimore: The records of more than 1,000 cases are available, and in reviewing many of the articles covering them one is impressed by the variety of symptoms presented and by the time of their onset. If herniation of a portion of a viscus is unaccompanied by incarceration or strangulation, the symptoms usually are quite indefinite, extremely intermittent and obviously of a wide range of severity. On the other hand, if strangulation, either partial or complete, is an early complication, the patient is immediately rendered critically ill, and early surgical intervention is imperative. I recommend careful observation, clinically and roentgenographically, of patients who have been subjected to compression injuries of the chest and the abdomen; proper roentgen examination of all patients who have had bullet or stab wounds of the chest, whenever the site of the wound would suggest the possibility of an injury to the diaphragm, and the use of conditioned air in the preoperative and postoperative care of these patients, thus reducing the hazards of pulmonary complications prior and subsequent to the necessary operations.

Intestinal Obstruction Due to Gallstones

DR. M. J. HENRY, Louisville, Ky.: As a rule an absolute diagnosis of gallstone obstruction cannot be made before operation, though in many cases the condition might be suspected. Of the five cases reported, three were in females and two in males. The ages were 55, 58, 59 and two 64, making an average of 60. These 5 cases occurred in 163 cases of obstruction, making the ratio 1 to 33. All but one of the cases gave a history of pain, either dull or colicky, and digestive disturbance for from five to nine months prior to operation. Pain was present in each case as was vomiting. The mortality in these five cases was 60 per cent. A great addition to our means of treating ileus of all types has been the introduction of the Levin tube. The high mortality in these cases is due to delayed operations. The histories of gallstone ileus show that the condition is one of sudden change from either indefinite digestive disturbance or recurring attacks of colic to one of more intense pain, with a marked increase in the frequency of vomiting. When prostration, stercoraceous vomiting, distention and failure of the capillary circulation have made their appearance, the chances of a favorable operative result are remote. The frequency of the occurrence of gallstone ileus should suggest this diagnosis whenever there is apparently a sudden major abdominal catastrophe in a patient who gives a history of previous biliary colic or digestive disturbance of the cholecystitis type.

The Effect of Arteriovenous Aneurysms on the Heart

DR. MONT R. REID, Cincinnati: Arteriovenous aneurysms involving large vessels usually affect the heart. The main factor in the causation of the damage to the heart is the increased amount of blood that it has to handle. This results from the quick shunting of a large amount of arterial blood back to the heart. There results a condition resembling aortic insufficiency, although the lesion may be far removed from the aortic valves. A case of femoral arteriovenous aneurysm, which had been present for seventeen years, illustrates many of the effects of this condition, such as cardiac hypertrophy and dilatation, Branham's bradycardiac phenomenon, disturbances of blood pressure (Hill and Flack sign), changes in the electrocardiogram, pulsating varicosities, dilated and atrophied proximal artery, capillary pulsation and very adequate collateral circulation. Excision of the aneurysm relieved completely all cardiac symptoms and caused the heart to return to a normal size. This case strongly supports the teaching of Matas that the heart should be prepared for the complete closure of the fistula by a preliminary period devoted to temporary occlusions of it. Although the abundant collateral circulation reduces to a minimum the danger of peripheral gangrene, the heart should be considered and partially adapted to the great sudden change that will follow the operation. An intelligent patient who has practiced temporary occlusion of his own fistula is usually quite certain when it can be permanently occluded without causing any cardiac distress.

Skeletal Defects and Anomalies

DR. ISIDORE COHN, New Orleans: Skeletal deformities and defects are due to retarded development at a particular period. Theories making amniotic bands responsible for deformities should be discarded. Congenital deformities are in many cases recessive and not dominant. The theory of primogeniture is no longer tenable. Clinical observations in cases presenting a three phalanged thumb indicate that the metacarpal has disappeared in the process of evolution. What is ordinarily considered the first metacarpal is in all probability a first phalanx. This view is strengthened by the fact that the epiphysis of the so-called first metacarpal is at the proximal end, the position occupied by the epiphysis of the other phalanges, whereas the epiphysis of the other metacarpals is at the distal end. The clinical cases reported in the first group include syndactylism, polydactylism, hypodactylism, fusion of carpal bones, absence of carpal bones, defect of the fibula, ectromelia, and a three phalanged thumb. Dyschondroplasia and other congenital deformities are identical in origin.

Cardiac Features of Goiter

DRS. JOHN DEJ. PEMBERTON and FREDRICK A. WILLIUS, Rochester, Minn.: In cases of hyperthyroidism, the clinical signs involving the circulatory system, such as tachycardia, palpitation, increase in pulse pressure, the tendency to flushing and sweating, basal cardiac murmurs, and occasionally the occurrence of bruits in the peripheral arteries, are well explained by an increase in the rate of circulation, which is a usual accompaniment of increases in basal metabolic rate. Although there are no distinctive histopathologic changes in the hearts of patients who die in the active stage of hyperthyroidism, numerous instances of cardiac hypertrophy have been demonstrated by necropsy (15 per cent); increases have been noted of from 100 to 200 Gm. beyond the accepted standard of Smith, based on age, height and weight in cases in which primary cardiac disease was absent. Auricular fibrillation, the most common disorder of rhythm, occurs in about one fourth of the cases of exophthalmic goiter and hyperfunctioning adenomatous goiter. The occurrence of congestive heart failure solely as a result of hyperthyroidism, even though its occurrence is infrequent, has been proved many times by careful correlations of clinical data and results of necropsy. In the preparation of patients for operation, caution in the use of digitalis is stressed. A study was made of 100 consecutive cases of congestive heart failure accompanying exophthalmic goiter and 100 consecutive cases of hyperfunctioning adenomatous goiter. The debility of the patient, commonly proportionate to the duration of hyperthyroidism, the degree of hepatic injury and the basal metabolic rate are more accurate indications of the operability than the severity of the cardiac disorder. A large percentage of the patients with congestive heart failure, who without operation are apparently doomed to an existence of chronic invalidism, will easily withstand partial thyroidectomy, subsequently regain complete cardiac efficiency, and enjoy many years of active and useful life.

The Inverted Posture in Examination and Treatment of Diseases of the Terminal Bowel

DR. GRANVILLE S. HANES, Louisville, Ky.: The lateral, dorsal and knee-chest are the positions suitable for a casual survey in investigating and treating the terminal bowel and the structures immediately surrounding its outlet. But the inverted position as proposed and adopted by me in 1905 possesses superior advantages, which I have found indispensable for proper study and treatment of conditions affecting the upper portion of the rectum and sigmoid. Any patient may easily assume this posture by dragging over the edge of a table or bed. The patient's trunk should not be perpendicular, as was first thought, but at an angle of 40 or 50 degrees. The chief object is to have the abdominal muscles relax, the back sag, the pelvis tilt forward and the viscera drop from the pelvic cavity toward the diaphragm. An illustration of the inverted posture is shown in THE JOURNAL, Oct. 3, 1908, page 1135. I have employed the posture for twenty-five years and have found that its advantages exceed those of the knee-chest or other postures.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

42: 1053-1280 (Nov.) 1931

*Endemic Purpuric Meningococcus Bacteremia in Early Life: Diagnostic Value of Smears from Purpuric Lesions. S. McLean and J. Caffey, New York.—p. 1053.

*Late Respiratory Failure of Immature Infants Treated Successfully in Drinker Respirator. D. P. Murphy, J. E. Bowman and R. B. Wilson, Philadelphia.—p. 1075.

*Effect of Sodium Citrate on Loss of Weight in New-Born Infant. H. L. Eder and B. Bakewell, Santa Barbara, Calif.—p. 1079.

Gonorrheal Vulvovaginitis: Possible Sequelae in Adult Life. P. Dooley, Kent, Conn.—p. 1086.

*Calcium and Phosphorus Metabolism of Infants Receiving Undiluted Milk. Martha van Kirk Nelson, Iowa City.—p. 1090.

Amide Nitrogen of Blood in Children. A. Bernhard and J. S. Leopold, with Assistance of I. J. Drekter, New York.—p. 1100.

Undulant Fever in Children: Three Cases. E. D. Anderson and J. F. Pohl, Minneapolis.—p. 1103.

*Use of Human Blood in Protection Against Mumps. L. H. Barenberg, New York, and J. Ostroff, Brooklyn.—p. 1109.

*Spleen in Measles: Further Contribution. E. Friedman, Denver.—p. 1114.

*Spinal Fluid Cytology in Poliomyelitis: Graphic Study. Huldah E. Thelander, E. B. Shaw and Margaret Limper, San Francisco.—p. 1117.

Otitis and Otalgia of Teething Child. E. M. Josephson, New York.—p. 1123.

Allergic Migraine in Children. R. M. Balyeat and H. J. Rinkel, Oklahoma City.—p. 1126.

Phospholipids in Blood in Infants and in Children. I. N. Kugelmass and Ethyl Greenwald, New York.—p. 1134.

Physical Traits of Iowa Infants: Iowa Child Welfare Research Station, Iowa City.—p. 1137.

Seasonal Variation in Antirachitic Effect of Sunshine. F. F. Tisdall and A. Brown, Toronto.—p. 1144.

Meningococcus Bacteremia.—In eighteen cases of meningococcus bacteremia with purpura, McLean and Caffey demonstrated meningococci in smears from the purpura in fifteen, or 83 per cent. In four, or 12.5 per cent, of thirty-two cases of meningococcus bacteremia with purpura, no inflammatory changes were demonstrated in the cerebrospinal fluid. The mortality in meningococcus bacteremia with purpura was 50 per cent. All patients younger than 6 months of age died. The mortality in the first year of life was 66⅔ per cent. Hemorrhage into the suprarenals was present in three cases. Suprarenal damage is a possible cause of death in rapidly fatal cases. Of seven cases in which necropsy was adequate for this determination, enlargement of the thymus and hyperplasia of the lymphoid tissue of the intestine were present. From their observations the authors conclude that smears from the purpuric skin lesions in meningococcus bacteremia offer a rapid, exact and convenient method for immediate bacteriologic diagnosis. In 12.5 per cent of cases it was the only method by which an immediate bacteriologic diagnosis could be made.

Respiratory Failure of Immature Infants.—Observations made by Murphy and his associates in three cases of late respiratory failure of immature infants in which they used the Drinker respirator bring out certain points of interest regarding the use of this method in carrying on prolonged artificial respiration on new-born infants. The principle on which the apparatus works is sound. The machine has already reached a high degree of development. Its value in the treatment of new-born infants has been demonstrated so many times that the technic of its operation has become satisfactorily standardized. It offers a practically instantaneous method for inaugurating a satisfactory degree of pulmonary ventilation, and this can be maintained as long as desired. The infant receives its treatment in the optimum temperature, at a time when conservation of body heat is extremely important, while at the same time its needs for ventilation are met by the use of a method that offers the least amount of trauma during the process. In fact, the infant is not subjected to any force the degree of which cannot be accurately controlled and measured. With these advantages the Drinker respirator constitutes not only the most satisfactory method yet devised for the treatment of the immediate asphyxias of birth but one that can be easily and safely applied in the treatment of the late attacks of apnea in immature infants.

Loss of Weight in the New-Born.—Eder and Bakewell state that the addition of 5 grains (0.3 Gm.) of sodium citrate to each 2 ounces (60 cc.) of 5 per cent lactose solution given to new-born infants during the first days of life appears to be of value in decreasing the initial postnatal loss in weight. The average loss in 100 consecutive infants was 5.29 ounces, or 150 Gm. Weight at birth is regained earlier; 83 per cent had again reached their original weights on or before the fourteenth day. Only three of the infants had inanition temperature. The general condition of the infants as shown by activity, ability to nurse, color and absence of icterus neonatorum was far better than that of infants who had lactose solution without sodium citrate.

Calcium and Phosphorus Metabolism.—Nelson presents seventy observations on the calcium and phosphorus intake, output and retention of a group of infants fed undiluted milk. The average daily retention of calcium ranged from 0.07 Gm. per kilogram at 2 months to 0.04 Gm. per kilogram at 10 months of age. The average daily retention of phosphorus ranged from 0.04 Gm. per kilogram at 2 months to 0.03 Gm. per kilogram at 10 months of age. The calcium-phosphorus retention ratio ranged from 1.3 to 2.3, with an average ratio of 1.75:1. The average calcium content of the blood was 12 mg. per hundred cubic centimeters with 10 as the lowest value obtained, and the average phosphorus content was 6.3 mg. per hundred cubic centimeters with 5.4 as the lowest value observed. Measurements of calcified areas showed no widening of the distal end of the shaft of the radius and an excellent rate of ossification of the carpal centers. Roentgenograms of the wrists showed certain irregularities in the growth of bones frequently associated with mild rickets. Owing to the large amounts of calcium and phosphorus retained by these infants, the consistently high blood values, the excellent growth of the carpal centers and the occurrence of the "rachitic" changes in midsummer as well as in winter, the author raises the question whether these slight irregularities of growth at the epiphyseal junctions unaccompanied by rarefaction are rachitic or whether they may be normal accompaniments of the rapid increase in rate of growth.

Use of Human Blood in Treatment of Mumps.—Barenberg and Ostroff made a study of 180 children, ranging in age from 1½ to 3 years, and housed in nine separate wards, who were susceptible to mumps. Serotherapy was employed in 55 of the 180 susceptible children in order to reduce the incidence or to attenuate the disease. At the onset of the epidemic 44 children received 12 cc. of blood from convalescent patients, and 11 children the same amount of blood from an adult who had had mumps in childhood. In seven wards, comprising 139 children, prophylactic treatment was given to about half the children in each ward, the remainder serving as controls. Those in two wards were not given specific therapy and consequently afforded an excellent opportunity for comparison. The average incidence in the untreated wards was 49.5 per cent, whereas in the other seven wards in which treatment was given to some of the children the average incidence was 26.6 per cent. Serotherapy proved of definite value in reducing the incidence of mumps, the average for the treated children being 15 per cent, while that for the untreated children was 39 per cent. Mumps was markedly attenuated by this form of serotherapy. The results from the injection of blood from an adult who had had mumps in childhood were not as definitely favorable as those with the blood of patients convalescent from mumps, perhaps because inadequate amounts were injected. A definite shortening of the epidemic was brought about by the use of serotherapy; from about six months in previous epidemics the period dropped to about two months in the epidemic observed by the authors.

The Spleen in Measles.—Observations made by Friedman during a recent epidemic of measles confirmed his view, previously expressed, that a splenic tumor cannot be regarded as a common phenomenon in measles; it was found in only 12 and 11 per cent, respectively, of the cases observed during two successive epidemics. The incidence of splenic enlargement and the size attained by the organ show no relationship to the stage of development of the infection and to its severity.

Spinal Fluid Cytology in Poliomyelitis.—Thelander and her associates report that in a series of 122 cases of poliomyelitis the cell count of the spinal fluid varied from 10 to 700, with the greatest number of cases between 50 and 200 and about an equal number below 50 and between 200 and 300, dropping off rapidly above 300, but a few scattered cases occurring up to 700. A high percentage of cases of bulbar involvement may account for the large group with a low cell count. About half of the cases had a polymorphonuclear percentage over 50, the peak of the curve being in the group from 50 to 75 per cent. This observation is not in accordance with most authors and may be accounted for by variations in different epidemics and by the technic of staining and studying the cells. The percentage of polymorphonuclears during the acute phase of the disease was independent of the day of the disease. The presence of a high percentage of polymorphonuclears is therefore probably dependent on some factor other than the stage of the disease. The blood count quite consistently showed a slight leukocytosis with a relatively high polymorphonuclear count.

Annals of Internal Medicine, Ann Arbor, Mich.

5: 539-672 (Nov.) 1931

*Vital Hormone of Adrenal Cortex. F. A. Hartman, B. D. Bowen, G. W. Thorn and C. W. Greene, Buffalo.—p. 539.

*Relation of Parathyroid Glands to Calcium Metabolism. H. A. Bulger and D. P. Barr, St. Louis.—p. 552.

Etiology and Treatment of Diabetes Insipidus. T. B. Futcher, Baltimore.—p. 566.

*Level of Oxygen Exchange in Obesity as Factor in Planning Treatment. F. A. Evans, Pittsburgh.—p. 574.

*Many Sided Question of Protein in Nephritis. W. S. McCann, Rochester, N. Y.—p. 579.

*Mountain Fever and Spotted Fever of Rocky Mountains: Clinical Studies. N. Toomey, Palmyra, Mo.—p. 585.

American Mountain Tick-Fever and Spotted Fever of Rocky Mountains: Comparative Epidemiography. N. Toomey, Palmyra, Mo.—p. 601.

Thrombo-Angiitis Obliterans Among Persons Past Middle Age. B. T. Horton and G. E. Brown, Rochester, Minn.—p. 613.

Treatment of Angina Pectoris with Tissue Vasodilator Extract: Preliminary Report. J. B. Wolffe, D. Findlay and E. Dessen, Philadelphia.—p. 625.

Medulloblastoma Cerebelli: Midline Cerebellar Tumors in Children and Young Adults: Case with Autopsy. K. Rothschild, New Brunswick, N. J.—p. 643.

*Electrocardiographic Studies of Effects of Propylene as General Anesthetic in Man. M. H. Kahn and L. K. Riggs, New York.—p. 651.

Vital Hormone of Suprarenal Cortex.—Hartman and his associates administered a potent cortical suprarenal extract to two patients with practically complete suprarenal insufficiency. In the first case it was of undoubted benefit. Following its use the patient recovered from a highly critical state. That it kept him alive for nearly eight months was indicated by four definite relapses which followed its reduction or its discontinuance. Readministration or increase of dosage in each relapse was followed by return to his former level. He was making slow but definite improvement when bronchopneumonia caused his death. The period of treatment in the second case was too short for observation to be of any value. A third patient, one in whom the suprarenal insufficiency was much less severe, has shown a remarkable increase in her ability to work without fatigue. Clinical improvement has not kept pace with this increase. One patient with hyperthyroidism has exhibited decided clinical improvement following the use of the extract alone. Two patients with muscular atrophy and one with muscular dystrophy have shown some improvement. There is evidence that cortical extract reduces also the asthenia which follows certain infections.

Parathyroids and Calcium Metabolism.—According to Bulger and Barr, the influence of the parathyroids on calcium metabolism is apparent not only after their removal and the administration of parathyroid extract but also in clinical hyperparathyroidism, a condition which appears most often in association with osteitis fibrosa cystica but also with multiple myelomas and metastatic tumors of bone. The level of serum calcium is the best index of parathyroid function and is of such diagnostic importance that its use as a test should be applied in all cases with general disease of bone and in all conditions in which there may be a disturbance of calcium metabolism. The serum calcium, however, does not always reflect either disturbances of calcium metabolism or changed activity of the parathyroids. It may be normal even with marked disturbances of calcium metabolism. In evident hyperparathyroidism it appears that serum calcium may occasionally be within normal limits. Low serum calcium may be due to a lack of vitamin D or to an increase of phosphate in the serum. These conditions, however, are not likely to be confused with hypoparathyroidism. Hypercalcemia usually indicates an increased activity of the parathyroids.

Oxygen Exchange in Obesity.—Evans believes that thyroid administration is not necessary in most cases of obesity because a diet consisting of 1 Gm. of protein and 0.6 Gm. of carbohydrate per kilogram of ideal weight, and no more than from 15 to 20 Gm. of fat, gives diets of from 400 to 600 calories on which these patients reduce rapidly without thyroid. They may be maintained on these diets for months if necessary with nothing but improvement in their general condition. Thyroid administration in the treatment of most cases of obesity is contraindicated, because the calories per hour oxygen exchange giving a normal basal metabolic rate when calculated on the actual weight, if related to the ideal weight, give a figure considerably higher than normal. This represents one of the physiologic types of obesity that should not be increased by thyroid therapy. The drop in the basal metabolic rates with the institution of limited diets probably accounts for the feeling of well being and increased resistance to fatigue observed by these patients and in part for the feeling of satiation with the lowered food intake, which affords contentment with the diet prescribed. This encourages these patients to persist and should not be eliminated by thyroid medication. A few patients—perhaps no more than 2 per cent of all—do not lose weight rapidly without thyroid medication. These cannot be differentiated from the others by history or physical signs. They may be recognized with assurance only by repeated basal metabolic determinations during the course of dieting.

Protein in Nephritis.—McCann describes experiments which have convinced him that liberal protein allowances in the diet do not of themselves injure the kidneys. When the excretory power is nearly at the level of the minimal endogenous protein catabolism, which can be achieved by making full use of the protein-sparing qualities of carbohydrate and fat, nothing is gained by reducing the protein intake below the point of nitrogen balance. Full advantage should be taken of the tendency to deposit protein by all individuals who have lost it, either by inanition or by toxic destruction or through albuminuria. Protein that is deposited makes no demand on excretory functions; it builds up depleted tissue and circulating proteins with beneficial effects on the course of the disease.

Mountain Fever and Spotted Fever.—Toomey states that for seventy-five years many physicians practicing in certain parts of the mountainous West have recognized a brief, seasonal, nonexanthematic, remittent fever with certain characteristic symptoms and no known mortality, which they have considered indigenous to the locality and different from typhoid, malaria or other known diseases, although it is confused with malaria or typhoid by some. The early published reports are not absolutely conclusive, but a review of them leaves the impression that there were early observed cases of a fever, called mountain fever, that conformed to the present knowledge of the disease and remain inexplicable on the basis of a plasmodial, enteroideal or undulant infection. A seasonal, nonexanthematic, remittent (occasionally continued) and intermittent fever of short duration and no known mortality, conforming to the conception of mountain fever as understood in certain parts of the Rocky Mountain region, was associated by Kieffer with a transmission by means of the bites of wood ticks. The virus of mountain fever has not been studied and the immunology of the disease with respect to spotted fever is not known. The tick-borne, nonexanthematic mountain fever has a clinical course characteristic and peculiar to itself and one not difficult

to distinguish in the aggregate. For clinical or statistical purposes it would be exceedingly unwise to identify mountain fever with spotted fever or undulant fever. Until its course is identified or the immunologic relationships of the disease are clearly established, mountain fever should be considered a distinct disease entity. Nosologically the tick-borne mountain fever resembles the dengue group of fevers somewhat more closely than the relapsing (spirochetal) fevers. The author proposes for it the name American mountain tick fever.

Propylene as General Anesthetic.—Kahn and Riggs made electrocardiographic studies on the human subject of the effects of propylene as a general anesthetic. From their previous experimental work with animals, Riggs and Goulden had come to the conclusion that the toxic action of propylene is primarily on the respiratory center and quite secondarily on the heart. The authors' study corroborates this conclusion for the human subject as well. Propylene used as a general anesthetic in man produces complete anesthesia after an average of eight inhalations. There occurs no struggling or any reactive symptoms during the period of induction. During complete anesthesia the breathing is quiet and regular. In the cases observed by the authors, the heart remained uninfluenced by the anesthetic except for a diminution of sinus arrhythmia during complete narcosis. The pulse rate and the character of the pulse as well as the electrocardiogram remained unchanged. Recovery from the anesthetic was prompt in each instance, with remarkably immediate return of memory, the patient promptly pressing his hand signal, believing that he was "still going under" after even ten minutes of complete anesthesia. The quicker induction resulted when the mixture contained 50 per cent of propylene.

Archives of Internal Medicine, Chicago

48: 907-1063 (Nov.) 1931. Part II.

*Influence of Solar Rays on Metabolism, with Especial Reference to Sulphur and Pellagra in Southern United States. J. H. Smith, Richmond, Va.—p. 907.

Solar Rays and Metabolism.—According to Smith, that there are biologic effects due to radiant energy is not open to question, and that some of these are related to pellagra seems probable. An adequate supply and a normal metabolism of sulphur appear to exert a protective influence against the pathologic effects of solar irradiation. The evidence suggests that an inadequate supply of sulphur as cystine is an important cause of pellagra and that the abnormal metabolism of sulphur is an important feature of the disease. The distribution of pellagra and the variations in its prevalence and incidence suggest that solar irradiation, under certain abnormal conditions of nutrition, is an important factor in the etiology of pellagra and that the reaction to solar rays not only is conditioned by the nutritive state but depends on a state of the tissues determined by contrasts in degree and intensity of exposure during the annual cycle.

Archives of Neurology and Psychiatry, Chicago

26: 905-1118 (Nov.) 1931

*Adamantinoma of Craniopharyngeal Duct. C. H. Frazier and B. J. Alpers, Philadelphia.—p. 905.
Squamous Epithelial Rests in Hypophysis Cerebri. H. T. Carmichael, Rochester, Minn.—p. 966.
*Histopathology of Triorthocresyl Phosphate Poisoning: Etiology of So-Called Ginger Paralysis (Third Report). M. I. Smith and R. D. Lillie, Washington, D. C.—p. 976.
*Productive-Degenerative Form of Endarteritis of Small Pial Vessels: Case Showing Unusual Clinical and Histologic Features. D. Rothschild, Foxborough, Mass., and K. Lowenberg, Ann Arbor, Mich.—p. 993.
*Spinal Cord Changes in Lymphogranulomatosis. A. Weil, Chicago.—p. 1009.
*Plantar Reflexes in Normal Adults. H. A. Davidson, Newark, N. J.—p. 1027.
Denis-Ayer Method for Quantitative Estimation of Protein in Cerebrospinal Fluid. J. B. Ayer, Mary Elizabeth Dailey and F. Fremont-Smith, Boston.—p. 1038.
*Spasmodic Torticollis. G. B. Hassin, C. F. Schaub and H. C. Voris, Chicago.—p. 1043.
Hormonal Causes of Premenstrual Tension. R. T. Frank, New York.—p. 1053.

Adamantinoma.—In the files in the neurosurgical clinic of the University of Pennsylvania are 244 cases of sellar and parasellar lesions, and of this number Frazier and Alpers have classified 14 as adamantinoma; of these, 11 have been definitely identified histologically; in 2 the histologic picture is suggestive and in 1 the diagnosis is based on the presence in a child of a large calcified suprasellar cyst. The identification of the lesion as an adamantinoma before operation is not free from difficulties. Variations in the exact location of the lesion between the third ventricle above and the pituitary fossa below, variations in the field distortions, variations in the roentgenograms, variations in the endocrine picture, and discrepancies in the age of the patient are such that one may well hesitate before operation to speak of the nature of the lesion with much assurance. Contrary to what seems to be the prevailing opinion, the authors believe that of the two craniopharyngeal duct tumors, the adamantinomatous and the Rathke pouch tumors, the former are relatively much more frequent. They give abstracts of the histories of the fourteen cases that they studied and a detailed description of the clinical manifestations and pathologic changes observed in this condition. They believe that the following classification would probably cover the various tumor derivations of the craniopharyngeal duct: (1) adamantinomas or ameloblastomas, (2) Rathke's pouch tumors, (3) carcinomas, and (4) teratomas. The question arises as to the best term by which to designate these various tumor types, particularly the first two. The term craniopharyngiomas has the merit of being noncommittal, particularly in the present state of knowledge and doubt concerning the exact origin of some of these tumors. It is a term that comprises the entire group of tumors, which is composed of several types. So far as it fails to designate the various subgroups, it falls short of the mark. As a general term to designate the tumor derivations of the craniopharyngeal duct, it is probably the best term that has yet been proposed. It seems that a better term should be available than that of the adamantinomas, which comprise a large part of the tumors under consideration. The term is descriptive but not wholly satisfactory. Ameloblastoma is probably a better name for the tumors. It has the merit of designating the type of cell that is characteristic of the tumor and of implying the similarity that the tumor bears to the enamel organ. It conforms, moreover, to the present tendency to designate tumors by the type of cell which comprises the tumor and which by histochemical differentiation gives rise to the tumor proper. It is somewhat misleading in that, while ameloblasts are present, no enamel has yet been discovered in these neoplasms. Until more is known about the histologic characteristics of Rathke's pouch tumors, one cannot give them a better name. The present term, however, is decidedly unsatisfactory.

Triorthocresyl Phosphate Poisoning.—Smith and Lillie studied the histology of the nervous system in paralysis due to adulterated fluidextract of ginger in man and compared it with the effects produced by triorthocresyl phosphate in suitable experimental animals. The results indicate that the multiple neuritis of this paralysis is essentially a degeneration of the myelin sheaths of the peripheral nerves, with a variable amount of relatively moderate central degenerative changes affecting the anterior horn cells throughout the spinal cord but more often in the lumbar and cervical regions. Essentially similar lesions were observed in experimental animals in which partial paralysis was produced by means of triorthocresyl phosphate.

Endarteritis.—Rothschild and Lowenberg report a clinically atypical case of endarteritis in which unusual vascular lesions of a productive-degenerative nature were found. The changes were limited to the smaller arteries and arterioles of the central nervous system. The smaller vessels of the pia were involved with greatest regularity. The first alterations consisted in swelling and proliferation of the endothelial cells, whereby masses of large, rounded elements with translucent but slightly granular cytoplasm were formed. This resulted in complete or partial blocking of the lumens of the affected vessels. Following this, the newly formed cells underwent severe fatty degenerative changes, which often spread to the media. Complete disintegration of the walls of the vessels frequently ensued, with the occurrence of thrombosis and hemorrhages. The end-stage of the process consisted in connective tissue organization of the involved vessels. There was no tendency to recanalization, and splitting of the elastica interna was not observed. Calcification did not take place. Clinically, the case showed

an early and progressive dementia. There was a combination of pyramidal, extrapyramidal and pseudobulbar signs, with an unusual manifestation of tonic innervation in the left hand. The clinical picture was complicated by the presence of a paraplegia in flexion. This was found to be due to alterations produced by a tumor of the cauda equina. There was no apparent relation between the vascular lesions and the tumor, which was regarded as a perineural fibroblastoma.

Lymphogranulomatosis.—Weil collected reports from the literature of forty-three cases of lymphogranulomatosis in which the spinal cord had been diseased and in which observations at necropsy or at operation had been recorded. Three personal cases that had been studied histologically were added. In 85 per cent of all the cases there was an invasion of the spinal canal by epidural lymphogranulomatous tissue. In 7 per cent which had shown paraplegia clinically and in which there had been treatment with roentgen rays only scar tissue could be demonstrated in the spinal canal, together with severe disease of the retroperitoneal and intrathoracic lymph nodes. In two cases, 4 per cent, there was an infectious encephalomyelitis, which could explain the clinical symptoms. In two cases, both of boys aged 14, a syringomyelia was found. In the differential diagnosis of symptoms of disease of the spinal cord in a case of Hodgkin's disease of several years' standing, one should consider (1) invasion of the spinal canal by lymphogranulomatous tissue (92 per cent), (2) an infectious myelitis and (3) syringomyelia. The idea that a hypothetic toxin might produce the histologic picture of subacute combined degeneration (pernicious anemia type) should be abandoned. The therapy should be directed to early roentgen treatment and laminectomy. The dorsal segments of the spinal cord were involved in 80 per cent of all the cases, while in only 16 per cent the cervical region was affected and in 4 per cent the lumbosacral region alone. A comparison of cases in which treatment with roentgen rays had been given with cases in which this treatment had not been given did not show any prolongation of life in the former case; in 86 per cent of all cases that came to necropsy the patients died from one to six months after the onset of the paraplegia.

Plantar Reflexes.—Davidson emphasizes the fact that in adults there is no one type of response that can be considered the normal plantar reflex. In most cases all the toes flex, but extension of the toes, even of the great toe, is compatible with a normal motor system. Isolated extension of the great toe with fanning of the other toes does not occur in normal adults. In eliciting the plantar reflex, the positions of the patient's head and knee are not important, and distraction is not usually necessary. When withdrawal of the whole foot occurs, the patient should be reexamined with a lighter stimulus. A pin drawn along the sole of the foot is a convenient instrument for studying the plantar reflex; it is not a nocuous stimulus. A pin inserted into the ball of the foot is a nocuous stimulus; it tends to produce flexion of all the toes. The Babinski sign is an extension and cannot therefore be a reflex of defense to a harmful stimulus. No theory has adequately explained the plantar reflex. In recording the plantar reflex, the clinician should describe the responses that occur in the lesser toes as well as in the great toe; secondary movements should be reported as well as primary ones. The statement "Babinski sign present" or "absent" is an inadequate description of the plantar reflex.

Spasmodic Torticollis.—According to Hassin and his associates, spasmodic torticollis may be defined as hyperkinesis of the musculature of the neck, of all the large and small, superficial and deep muscles that make up its complex motor system. The smaller, deep muscles of the neck (the anterior and posterior groups) contract first; the larger muscles, the trapezius and the sternocleidomastoid, act later, accentuating and completing the movements of the former. Thus the muscular contractions of the neck do not occur simultaneously but successively. Grossly, they usually show in the large muscles (sternocleidomastoid, splenius and trapezius) but they may predominate in the smaller muscles and result in brisk rotatory movements of the neck. The movements are often unilateral; they may be symmetrical, when, for instance, both trapezii or both sternocleidomastoids are involved. They may manifest many other varieties, depending on the predominance of the groups of muscles affected. Of great interest are the anatomic features of spasmodic torticollis. The anatomic features pertain to the type of muscles that produce an abnormal attitude of the head. In a case observed by the authors, the head was inclined to the right, and the chin and nose also were turned in that direction. Such an abnormal position could hardly be explained by the excessive action of the left sternocleidomastoid muscle alone, for while it turned the face and chin to the contralateral shoulder, it should also have inclined the head to the ipsolateral, that is, the left side. A simultaneous contraction of the right splenius and to some extent of the upper portion of the right trapezius evidently prevented the inclination of the head to the left. Probably many other muscles were involved here, for in spasmodic torticollis the entire musculature of the neck is implicated.

Canadian Public Health Journal, Toronto

22: 541-594 (Nov.) 1931

Five Years' Operation of Reception Unit in Brandon Hospital. G. A. Little, Brandon, Manit.—p. 541.
Importance, from National Point of View, of Reducing Our Infant Death Rate. E. Nadeau, Quebec.—p. 551.
Treatment of Syphilis. H. A. Dixon, Toronto.—p. 554.
Psittacosis. N. M. Harris, Ottawa, Canada.—p. 557.
Some Aspects of Outbreak of Psittacosis in Burnaby, B. C. J. W. McIntosh, Vancouver, B. C.—p. 562.
Tularemia: Case. J. B. Cramer, Woodville, Ont.—p. 568.
Water and Ice Supplies on Common Carriers. F. M. Brickenden and J. R. Menzies, Ottawa, Canada.—p. 570.

Delaware State Medical Journal, Wilmington

3: 197-216 (Nov.) 1931

Modern Treatment of Cancer. J. C. Bloodgood, Baltimore.—p. 197.
Backache. I. M. Flinn, Jr., Wilmington.—p. 201.

Journal of Allergy, St. Louis

3: 1-112 (Nov.) 1931

Pollen Allergen. J. H. Black, Dallas, Texas.—p. 1.
Distribution and Importance of Paper Mulberry (Papyrius Papyrifera Kuntze) as Cause of Hay Fever and Asthma in United States. R. M. Balyeat and H. J. Rinkel, Oklahoma City.—p. 7.
Studies in Passive Transfer: 4. Rectal Absorption of Antigen (Egg White). F. S. Smyth and Minnola Stallings, San Francisco.—p. 16.
*XI. Dry Pollen Ophthalmic Test in Pollen Asthma and Hay Fever Patients Negative to Cutaneous Tests. M. M. Peshkin, New York.—p. 20.
*Glue Sensitivity. G. C. Andrews and C. W. McNitt, New York.—p. 30.
Some Allergic Factors in Essential Epilepsy. R. H. Spangler, Philadelphia.—p. 39.
*Allergy in Duodenal Ulcer: Incidence and Significance of Food Hypersensitiveness as Observed in Thirty-Two Patients. R. A. Kern and S. G. Stewart, Philadelphia.—p. 51.
Meteorologic Aspects of National Ragweed Pollen Problem. O. C. Durham, North Chicago.—p. 58.
Note on Quantitative Survey of Pollen. H. B. Wilmer and H. M. Cobe, Philadelphia.—p. 63.
Desensitization to Foods. A. H. Rowe, Oakland, Calif.—p. 69.
*Drug Idiosyncrasy. L. Unger, Chicago.—p. 76.

Dry Pollen Ophthalmic Test.—Peshkin describes the technic of a dry pollen ophthalmic test thus: The pollen employed for the test should be natural, properly prepared and dry. The lower lid of the eye to be tested is drawn downward sufficiently to expose the conjunctival sac. The patient is requested to look upward. A quantity of pollen equal to the amount used for a scratch test is dropped into the conjunctival sac from a small vial held between the thumb and the index finger. The pollen is allowed to remain in the eye for at least five minutes during which time the patient holds the lids shut with a pledget of absorbent cotton. At the end of five minutes the pollen residue is removed from the eye with the aid of an applicator tipped with cotton. Gentle manipulation is employed when removing the pollen residue, in order to avoid traumatism of the tissues. The appearance of the eye should be noted immediately before and after the pollen residue is removed. Five minutes later the reaction is read and then one or two drops of epinephrine hydrochloride (1:1,000 solution) is dropped into the eye. At the end of another few minutes the effect of the epinephrine is recorded. Further application of epinephrine may be used to clear or control the congestion caused by a strong positive reaction. When a patient is tested for the first time and shows a positive reaction in one eye, the other eye should be controlled with pine pollen. Eyes are not retested the same day. Tests can be performed daily.

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Sensitivity to Glue.—Andrews and McNitt report a case of severe reaction to glue antigen and discuss other cases found in the literature. They consider that the most satisfactory treatment is removal of the offending source from the environment of the patient. When this is not feasible or the source cannot be exactly determined, treatment by injections of glue allergen may be used. Such treatment by the injection of a series of minute amounts of glue allergen seems to have given beneficial clinical results which are, however, by no means striking. The properties of glue are discussed and the hypothesis advanced that most, if not all, so-called glue reactions will be found to depend on fish protein alone.

Allergy in Duodenal Ulcer.—Kern and Stewart present evidence which tends to show that food hypersensitiveness may be an etiologic factor in a small but appreciable percentage of cases of duodenal ulcer. Especially in those cases in which ulcer recurs after operation should an allergic factor be suspected. Its recognition in any case puts the treatment of that patient on the sound and successful basis of removing a cause.

Drug Idiosyncrasy.—Unger believes that the widespread idiosyncrasy to drugs is probably on the increase as new pharmaceutic products are being introduced. Coal tar derivatives are most important, as they are widely used. A case is reported of hypersensitiveness to amidopyrine. Passive transfer of drug idiosyncrasy from man to man has been unsuccessful to date; from man to animals, partially successful. The best treatment of hypersensitiveness to drugs is absolute avoidance.

Michigan State Medical Soc. Journal, Grand Rapids

30: 919-986 (Dec.) 1931

Address at Eighty-Second Annual Opening Exercises of Medical School, University of Michigan. C. G. Jennings, Detroit.—p. 919.
Postmortem Cesarean Section: Report of Case with Living Child. A. M. Campbell and J. D. Miller, Grand Rapids.—p. 923.
Secondary Anemia: Preliminary Report on Stomach. E. A. Sharp, Detroit.—p. 927.
Nonspecific Protein Therapy in Gynecology. H. W. Yates and D. Davidow, Detroit.—p. 931.
Surgical Treatment of Spinal Block: Case of Pfeiffer's Bacillus Meningitis Treated by Open Drainage. E. E. Martmer and E. C. Davidson, Detroit.—p. 936.
Practical Problems in Poliomyelitis. J. E. Gordon, Detroit.—p. 937.
Treatment of Infantile Paralysis Resulting from Poliomyelitis. F. C. Kidner, Detroit.—p. 944.
Results Obtained in Use of Toxoid as Immunizing Agent Against Diphtheria. D. J. Barnes, Detroit.—p. 949.

Military Surgeon, Washington, D. C.

69: 579-662 (Dec.) 1931

Influence of Epidemic Diseases on Military Operations in History of Western Hemisphere. G. A. Skinner.—p. 579.
Philippinitis. I. F. Peak.—p. 595.
*Fatigue in Soldiers Due to Chloride Losses: Replacement Through Use of Sodium Chloride in Drinking Water. C. P. McCord and T. L. Ferenbaugh.—p. 608.
Fungous Infection of Lung, Probably Sporothricum Schenkii: Case. A. Egdahl.—p. 615.
Resection of Larynx Without Loss of Voice: Case. F. J. Vokoun.—p. 617.
Causes of Death Among White Residents of Manila. G. F. Lull and L. L. Rizal.—p. 619.
New Mosquito Spray. R. L. Holt.—p. 625.

Fatigue Due to Chloride Losses.—McCord and Ferenbaugh call attention to the fact that under suitable conditions as to temperature, humidity, muscular exertion and at times emotional state as much as 6 liters of fluids may be lost from the adult human body in a single twenty-four hour period. However, the average daily loss of body fluids as sweat, under conditions of muscular exertion and heat, is much less, and under conditions attending most occupations does not exceed 3 liters. The chloride content of sweat is not constant, varying in different body areas and with the duration of sweating. As sweating is prolonged, the percentage of chlorides increases. The extremes established under experimental conditions on human beings are: minimum, 4.3 mg.; maximum, 8.3 mg. per cubic centimeter of sweat. The average proved to be 6.5 mg. In any assumed instance in which the chloride content is average (6.5 mg. per cubic centimeter) and in which the sweat output is 3,000 cc. during the twenty-four hours, the loss of chlorides from the body approximates 20 Gm., an amount that certainly may not be replaced by chlorides normally in foods and drinks. Excessive and prolonged sweating eventuates in dehydrated tissues, gastric hypo-acidity, acidosis, fatigue, exhaustion and muscular and gastro-intestinal cramps. These conditions are not alleviated by water alone and are in fact in some measure aggravated by water intake. Salinized drinking water (sodium chloride from 0.25 to 1 per cent) goes far in the prevention and control of that form of fatigue or exhaustion occasioned by mineral losses from the body. Military training in some of its aspects, together with actual warfare, may be carried out under conditions far from optimum as to heat, humidity, body exertion and emotional stress. Human physical capacity is markedly lowered as the result of attending fluid and mineral losses. Betterment is immediately brought about through the use of compensating salines as drinking water for the purpose of satisfying the existing mineral hunger.

Minnesota Medicine, St. Paul

14: 943-1020 (Nov.) 1931

*Present Status of Treatment of Carcinoma of Uterus. G. G. Ward, New York.—p. 943.
*Recent Developments in Treatment of Duodenal Ulcer. D. C. Balfour, Rochester.—p. 953.
*Phlegmonous Enteritis. E. M. Jones, St. Paul.—p. 956.
*Fractures of Hip. A. R. Colvin, St. Paul.—p. 960.
*Fracture of Humerus. H. W. Meyerding, Rochester.—p. 963.
Fractures of Ankle Joint. J. S. Holbrook, Mankato.—p. 971.
General Physical Examination. E. L. Tuohy, Duluth.—p. 974.
Intravenous Urography. W. F. Braasch, Rochester.—p. 978.
Value of Roentgenologic Examination of Chest. W. H. Ude, Minneapolis.—p. 984.
Value of Roentgenologic Examination of Stomach and Gallbladder. H. M. Weber, Rochester.—p. 987.
Indications for Examination of Colon. E. L. Gardner, Minneapolis.—p. 992.
Indications for Spinal Puncture. H. W. Woltman, Rochester.—p. 996.

14: 1021-1090 (Dec.) 1931

Mitral Disease in Adults. H. L. Ulrich, Minneapolis.—p. 1021.
Trichomonas Vaginalis Vaginitis. R. J. Moe and W. A. Coventry, Duluth.—p. 1024.
Treatment of Salpingitis. W. H. Rumpf, Jr., St. Cloud.—p. 1028.
Historical Review of American and English Literature on Vital Capacity. W. S. Lemon, Rochester.—p. 1031.
Surgical Treatment of Acute Empyema. S. W. Harrington, Rochester.—p. 1042.
Traumatic Abdomen. R. F. Raiter, Cloquet.—p. 1047.
Treatment of Paranasal Sinusitis. E. R. Bray, St. Paul.—p. 1051.
New and Effective Nonsurgical Method for Treatment of Chronic Suppuration of Middle Ear. C. Hymes, Minneapolis.—p. 1054.

Carcinoma of Uterus.—Ward believes that the best statistical reports show that radiotherapy is preferable in all classes of carcinoma of the cervix, although he believes that the radical operation will give as good results as radium in the early cases but at the high cost of primary mortality and morbidity. There is less primary mortality, less morbidity, less loss of time with radiotherapy than with the radical operation for carcinoma of the cervix. The morbidity results of the radical operation should not be forgotten. Radiotherapy in the advanced cases has no rival, with a 12 per cent salvage and as a palliative measure. Reirradiations, when properly employed, are of definite value in curing local metastases throughout the five-year period of observation. A frequent personal follow up throughout the five-year period is necessary in order to make possible the early discovery of local recurrences and to permit of prompt reirradiations. Carcinoma of the fundus is best treated by the combined use of radium and surgery whenever possible. The early treatment of cervical injuries and disease is an important prophylactic measure. The upward trend in the death rate from cancer calls for a compulsory registration of all cases. It is to be deplored that many women with cancer of the cervix are hopelessly doomed, because they are submitted to obviously useless and obsolete surgical procedures or have been improperly treated with radiotherapy. Finally, the author emphasizes that, if surgery is used for carcinoma of the cervix, only the radical Wertheim operation is justifiable and this requires experience with a highly specialized technic. If radium is used, experience and a thorough understanding of the action of this powerful agent and a full appreciation of the complexities of its safe and efficient application are essential.

Recent Developments in Treatment of Duodenal Ulcer.—Balfour calls attention to the fact that there are certain inherent advantages in direct operations for duodenal ulcer (operations which include removal of the lesion or lesions in the duodenum and reconstruction of the pyloric outlet), which

the examination. The author describes the normal appearance of the stomach following the ingestion of the skeleton barium meal and its appearance in chronic gastritis, peptic ulcer and carcinoma.

Pelvic Brim as Factor in Childbirth.—According to Vaughan, maternity is a natural function and is easy and safe when the pelvis of the race fits the head of the race. The misfit is due to loss of area in the pelvic brim owing to a circle being bent into an oval. The change is caused by rickets and disuse of the sacro-iliac joints before 14 years of age. Perfect teeth are found with the round pelvis, and this is well understood among primitive people, who consider such teeth essential in a bride.

Journal of Neurology and Psychopathology, London

12: 97-192 (Oct.) 1931

Biologic Significance of Extrapyramidal Syndromes, Apropos a Case of Wilson's Disease in an Adult: Second Contribution to Biology of Extrapyramidal Affections. R. Mourgue.—p. 97.
Progressive Hypertrophic Polyneuritis. W. G. Sears.—p. 137.
The "Path" Theory of Cortical Function. W. R. Ashby.—p. 148.

Journal of Tropical Medicine and Hygiene, London

34: 369-388 (Nov. 16) 1931

Observations on Intestinal Coccidiosis of Sheep in Northern Nigeria. J. G. Thomson and G. N. Hall.—p. 369.
Endemic Funiculitis: General Account. A. Castellani.—p. 373.
Mycetoma Pedis (Madura Foot) and Its Incidence in Brazil. H. P. Fross.—p. 376.
Native Medical Treatment in South Africa. F. G. Cawston.—p. 378.
Some Aspects of Colon Group of Organisms, with Especial Reference to Water Supplies of Trinidad. J. L. Pawan.—p. 380.

Lancet, London

2: 1169-1222 (Nov. 28) 1931

*Chronic Mastitis. W. S. Handley.—p. 1169.
*Radium and Pain: An Investigation of Certain Results of Radiotherapy in Cases Treated at University College Hospital. R. S. Pilcher.—p. 1175.
Staphylococcal Infection and Antitoxin Treatment. P. N. Panton, F. C. O. Valentine and V. W. Dix.—p. 1180.
Tick-Bite Fever in Southern Africa. J. M. Troup and A. Pijper.—p. 1183.

Chronic Mastitis.—Handley believes that, if one accepts his view that chronic mastitis is due to a lymph block of particular lobes of the breast determined by casual nipple infections which lead to obstruction of the main efferent lymphatics of the affected lobes, all the phenomena of the disease follow in natural and orderly sequence. He has demonstrated the edema of early chronic mastitis. Lymph block, wherever it occurs, is followed after a period of years by fibrous hyperplasia, at a later period by the production of papillomas on the overlying epithelial surface, and ultimately sometimes by carcinoma.

Radium and Pain.—According to Pilcher, the significance of pain may easily be overlooked by the ardent radium therapeutist whose interest is centered on the lesion he is treating rather than on the patient. Yet in the choice between radium and surgery in the treatment of disease, in which neither can show a real superiority as judged by survival, the occurrence of painful sequelae after radium might turn the scale in favor of surgery. The regression of a tumor under the influence of radium, important as it is as a scientific observation, does not necessarily imply a therapeutic success. If the patient's only symptom is pain and that is not relieved, his condition is but little improved. Again, if regression of a tumor is achieved at the price of pain from which the patient was previously free, the exchange is a poor one. On the other hand, one must beware of attributing to radium pain that is due to disease, and when the latter persists in spite of treatment it becomes very difficult to apportion the blame. The author examines in detail a series of cases of patients treated by irradiation in which pain occurred before or after treatment. He noted that radium treatment is able to relieve deep-seated and referred pain due to malignant disease. The only painful sequelae that can be attributed solely to radium are radionecrosis and direct injury to nerves. In some cases temporary arrest of a tumor is obtained without relief of pain and the suffering of the patient is prolonged. By increasing the fibrous tissue reaction to a growth, radium may aggravate pain due to pressure on nerves. The only factor in treatment that seems constantly to determine a painful sequel is such gross overdosage as to produce radionecrosis. There is no evidence that repeated treatment is harmful—much less that is is useless—provided the total dose is not such as to produce necrosis.

China Medical Journal, Shanghai

45: 1037-1129 (Nov.) 1931

Moniliasis Cutis Profunda. F. Reiss.—p. 1037.
Traumatic Rupture of Urethra. J. A. Snell.—p. 1040.
*Phrenicotomy in Treatment of Pulmonary Tuberculosis. Li Shu Fan.—p. 1048.
Neuropsychiatry: Report of Department of Neurology and Psychiatry of Severance Union Medical College, Seoul, Korea. C. I. McLaren.—p. 1058.
*Perforation of Gallbladder in Typhoid: Case. M. S. Tongs.—p. 1066.
Experimental Studies on Filtrable Microbe of Scarlet Fever and Activators in Relation to Hemolytic Streptococci. T. Toyoda and Y. Futagi.—p. 1071.
Classification of Diseases in Hospital Reports. D. M. Black.—p. 1081.
*Comparative Values of Toxin-Antitoxin Mixture, and Anatoxin (Toxoid) in Diphtheria Immunization. D. G. Lai.—p. 1084.
Acrodynia. C. L. Kao.—p. 1088.

Phrenicotomy in Pulmonary Tuberculosis.—Li Shu Fan believes that the operation of phrenicotomy occupies a definite place in the treatment of pulmonary tuberculosis. It is chiefly practiced, however, as a supplementary operation to other active methods of treatment. It is chiefly indicated in early unilateral basal lesions and in certain cases with lesions below the midlevel of the lungs. The best results are expected in cases of the chronic fibrous type. In certain advanced cases it is an invaluable palliative, although it is seldom a self-sufficient measure. It is clearly indicated whenever a suitable patient belongs to the poor and ignorant class, for cooperation in these cases is hardly to be expected, should an artificial pneumothorax treatment, which requires from three to six years, be initiated. Phrenicotomy is also indicated when the transportation is unavailable, owing to distance or to lack of means, the patient being unable to obtain refills in the event of artificial pneumothorax having been instituted. Whenever artificial pneumothorax is impracticable, owing to pleural adhesions, and at the same time when thoracoplasty is hazardous or unacceptable, phrenicotomy is the only effective measure in placing the diseased tissue at rest and arresting the disease. When phrenicotomy is practiced as a supplement to artificial pneumothorax it lessens the absorption of gas; it therefore lengthens the interval for refills. Whenever an artificial pneumothorax patient has had this supplementary operation performed and fails to return for refills, he is more or less protected from activating the disease because the reexpanding lung has a smaller chest cavity to fill owing to the permanent elevation of the hemidiaphragm. When it is practiced as a supplementary operation in artificial pneumothorax cases, it lessens the tendency to pleural effusions. In conjunction with the resection of the upper seven ribs it may advantageously supersede the severe operation of complete thoracoplasty; viz., the resection of twelve ribs. Phrenicotomy does not put the lung out of function, as respiration is carried on by the other muscles of respiration.

Perforation of Gallbladder in Typhoid.—Tongs reports a case of perforation of the gallbladder in typhoid and gives a brief review of the available literature. An exploratory laparotomy was performed, and the patient recovered. The perforation of the gallbladder in this case was probably brought on by an increase of intracystic tension associated with sloughing. The jaundice that was present might have been of an obstructive type, probably resulting from obstruction of the common bile duct by plugs of mucus or debris.

Diphtheria Immunization.—In immunizing Chinese students and children of preschool age in Shanghai against diphtheria with toxin-antitoxin mixture and with toxoid, Lai noted that toxoid produced more reactions, both local and general, in the students, particularly the adolescents and adults. In inducing immunity to diphtheria, as measured by the Schick test, he obtained much better results in the toxoid group (91.5 per cent) than in the toxin-antitoxin series (64.8 per cent). Toxoid does not contain any serum or antitoxin and therefore cannot possibly sensitize an individual to subsequent injections of therapeutic serums. In view of these observations the author believes that toxoid is the preparation of choice for diphtheria immunization in children of preschool age, while toxin-antitoxin still has its place in older children and in adults.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

47: 1693-1767 (Nov. 23) 1931

*Autopyovaccine in Therapy of Putrid Lung Suppurations. L. Bernard and Pellissier.—p. 1696.
Secondary Subacute Tuberculous Pericarditis in Adult: Case. L. Bernard and Pellissier.—p. 1702.
A Clinical Aspect and a Biologic Study of Diabetes Insipidus of Syphilitic Origin. R. J. Weissenbach, Gilbert-Dreyfus and J. P. Brisset.—p. 1709.
Double Aneurysm of Left Ventricle: Case. R. H. Silva.—p. 1717.
*Intensive Intravenous Injections of Iodine and Subcutaneous Injections of Carbon Dioxide in Treatment of Angina Pectoris. C. Lian, A. Blondel and Racine.—p. 1725.
Postvaccinal Antigonococcic Hyperacute Myelitis of Terminal Cone, Together with a Gluteal Zosteriform Eruption in Latent Poliomyelitis. G. Marinesco, S. Draganesco and St. Chiser.—p. 1735.
Ossification of Lateral Internal Ligament of Knee and Pellegrini-Stieda Disease. J. Rouillard and J. Bousser.—p. 1739.
Case of Obliteration of Abdominal Aorta. J. Rouillard and Louvet. —p. 1744.
Parkinsonian Syndrome and Mental Disturbances in Chronic Barbital Intoxication. J. C. Mussio-Fournier, E. G. Austt and G. Arribeltz. —p. 1748.
Anatomoclinical Study of Case of Primary Cardiac Insufficiency. Bezançon, de Gennes, Célice and Delarue.—p. 1754.

Autopyovaccine in Therapy of Putrid Lung Suppurations.—Bernard and Pellissier treated twenty patients with gangrenous abscess of the lung, diffuse pulmonary gangrene, dilatation of the bronchi with pulmonary gangrene and dilatation of the bronchi with fetidness. Their procedure is as follows: the sputum is collected in sterile petri dishes and injected in the muscles of the thigh of a guinea-pig. The dose varies according to the weight of the animal and also according to the virulence of the bacteria. It is found convenient to inject two or three animals with 1, 2 or 3 cc. of sputum. One of the animals may die in consequence of an anaerobic septicemia; in the others, abscesses may form at the point of inoculation. The pus from the abscesses is collected, emulsified and tyndallized and is ready for use. The emulsion is made up in different dilutions—ordinarily an almost limpid, opalescent solution representing 1 cc. of pus diluted in 30 cc. of distilled water. Intermittent sterilization is usually employed, but sometimes iodine is also added to attenuate the culture. The final solution is put up in 2 cc. ampules. The autopyovaccine is injected subcutaneously with increasing doses at relatively long intervals. The first two or three injections are 0.25 cc.; the subsequent three or four doses are 0.5 cc., and then the dosage is increased to 0.75 and 1 cc. The whole series consists of twelve subcutaneous injections. Some patients received twenty or more injections; others received stronger doses without greater improvement. It is best to space the first three or four injections three or four days apart and the following injections two or three days apart. Treatment in twenty patients was effective in ten cases and led to improvement in five cases. Roentgenography, intrabronchial injections of iodized poppy-seed oil and repeated laboratory examinations served as verifications of treatment. Good results were obtained in localized specific abscesses in which pneumothorax or surgical intervention proved ineffective. In gangrenes complicated by bronchial dilatation, however, the treatment frequently failed. There was improvement in the fetid condition and the degree of expectoration but no change was effected in the primary bronchial dilatation. This is probably true because the dilatation activates latent infection, which leads to recurrence of the gangrenous processes. The authors believe the prognosis in hyperacute gangrene of the lung depends on whether or not it is secondary to the bronchiectasis. If the bronchi are normal, autopyotherapy can be very useful; but in bronchial dilatation, improvement is only temporary. Similarly in bronchiectasis with fetid bronchorrhea but without parenchymatous sphacelus, autopyotherapy can only temporarily stop the vomica and fetidity. A cure can take place only when the reservoir of bronchiectatic infection is removed. The authors conclude that, even though autopyotherapy cannot remove the multiple reservoirs of infection in bronchiectatic conditions, it can nevertheless be useful in the removal of gangrenous symptoms or the arrest of their development. Sometimes, as in isolated gangrenous abscesses or in certain hyperacute gangrenes, surprising and lasting improvements or veritable cures are brought about by this convenient method of treatment.

Intensive Intravenous Injections of Iodine and Subcutaneous Injections of Carbon Dioxide in Angina Pectoris.—Lian and his co-workers find that intensive intravenous injections of iodine and subcutaneous injections of carbon dioxide often cause improvement in patients with angina pectoris of cardio-arterial origin after the usual medicaments have failed. They begin by the subcutaneous injection of carbon dioxide, utilizing the same instruments as those used for subcutaneous injection of oxygen; while the carbon dioxide vasodilatation is continued, intensive intravenous injections of iodine are next instituted. Finally, if these therapeutics do not benefit the patient, roentgen therapy of the cardiac plexus is resorted to. Among seventeen patients with angina pectoris, fifteen were improved by intravenous injections of iodine and in another group of twenty-seven patients with cardio-arterial angina nineteen were improved by carbon dioxide injected subcutaneously. The authors do not believe intravenous injections of iodine can remove the fundamental lesion of angina pectoris; the treatment can be only palliative. Angina pectoris cannot be of syphilitic origin unless aortic insufficiency also is present. Patients that showed syphilitic stigmas were little or not at all improved by iodine therapy alone. Neither iodine nor carbon dioxide can improve conditions of arterial hypertension. In the latter, the action of therapeutics must aim at the region in which vasoconstriction is most marked.

Bulletins et Mém. de la Soc. Nat. de Chirurgie, Paris

57: 1331-1412 (Nov. 14) 1931

Twenty-Six Observations of Ramisection. P. Wertheimer.—p. 1336.
*New Surgical Treatment of Inflammatory Adnexitis. H. Rotter. —p. 1351.
Hepatic Calcified Hydatid Cyst Marsupialized and Opened in Duodenum. M. P. Moiroud.—p. 1364.
Bacteriotherapy in Surgical Tuberculous Dystrophies (1923-1931). M. A. Vaudremer.—p. 1367.

New Surgical Treatment of Inflammatory Adnexitis.—Rotter proposes a treatment consisting of bilateral ligature of the utero-ovarian blood vessels at the level of the infundibulopelvic ligament—a ligature that includes both arteries and veins. This results in a diminution in the supply of arterial blood and a venous hyperemia in the region of the disease—circulatory modifications that are favorable to regression and can at times lead to a disappearance of certain pathologic conditions in which the primary factors are infection and inflammation. The treatment does not aim to replace hysterectomy unless the condition is a salpingitis with a tendency toward chronicity in women approaching the menopause; it is a conservative surgical intervention for acute and hyperacute conditions that do not react favorably to medical treatment and are characterized by relapses in sexually mature women. Results are more favorable when patients are hospitalized for a long period. The author reported the results in thirty cases, twenty-eight presenting a gonococcic infection and two puerperal salpingitis. The results immediately following operation are favorable: when the patient leaves the hospital, about the fifteenth day, her pain has disappeared, the uterus has become mobile and the large masses have disappeared completely or incompletely with a distinct diminution in size. The favorable results could not be attributed to medical treatment preceding operation or mere hospitalization. The information as to how long the results last in every case is not available: one patient still felt well after five months, five after four months, ten after two or three months. The operation is not dangerous.

Chirurgia degli Organi di Movimento, Bologna

16: 415-498 (Oct.) 1931

*Early Intervention in Congenital Muscular Torticollis. D. Bargellini. —p. 415.
Congenital Absence of Tibia and Deafmutism in Four Brothers. A. Carraro.—p. 429.
Rare Site of Posttraumatic Tuberculous Bursitis. T. Greco.—p. 439.
Mechanism of Monocondylar Fractures of Tibia, from Indirect Cause. S. Bistolfi.—p. 451.

Early Intervention in Congenital Muscular Torticollis.—Bargellini reports that the cases controlled six months after the intervention presented a perfect correction: a scarcely visible linear scar and attenuation of facial asymmetry. Therefore he considers that congenital muscular torticollis, if it shows

symptoms of notable gravity, presents indications for early surgical treatment, for the following reasons: 1. No danger is involved. 2. Surgical intervention corrects the defect. 3. It obviates preventive treatment, which is nearly always ineffective. 4. It prevents the onset or the accentuation of craniofacial asymmetry and scoliosis. 5. It does not require prolonged and severe after-treatments.

Riforma Medica, Naples

47: 1695-1732 (Nov. 9) 1931

Echinococcus Cyst of a Calcified Liver. M. Gavazzeni.—p. 1698.
*Recklinghausen's Disease with Paraplegic Syndrome. B. De Luca. —p. 1701.

Recklinghausen's Disease with Paraplegic Syndrome.—De Luca describes a rare case of Recklinghausen's disease in which a complete paraplegia was manifested, doubtless due to neurofibromas compressing the spinal cord.

47: 1735-1768 (Nov. 16) 1931

*Kala-Azar in Adults. F. Corona.—p. 1735.
*Malarial and Tuberculous Infections in a Malarial Region. L. Loi. —p. 1740.

Kala-Azar in Adults.—Corona reports four cases of kala-azar ("black disease," from the darkening of the skin) in adults and describes the pathologic symptoms. In one case, kala-azar was associated with pulmonary tuberculosis without any effects of synergy or antergy. Two other cases showed that this disease type may be wrongly diagnosed for a long period, being confused with malaria, the symptoms sometimes closely resembling those of malaria; also on an epidemiologic basis, since kala-azar often occurs in malarial regions, and likewise owing to the effective action of quinine in the initial stages of kala-azar. The fourth case was interesting for having given rise, as a sequel, to an atrophic hepatitis with ascites. The author emphasizes the development of the infection in waves and calls attention to the undulant type of the fever. He considers it preferable, for the search for the parasites in the adult, to resort to splenic puncture, as it gives more frequently positive results than puncture of the cord and is harmless, if the spleen has a solid consistency.

Malarial and Tuberculous Infections in a Malarial Region.—Loi brings out that the consideration of the morbidity and the mortality of malaria and tuberculosis in a region in which both diseases prevail, in the light of anatomopathologic researches, leads to the following conclusion: 1. Tuberculosis coincides often with signs of malaria. 2. There is no evidence of antergy between the two pathogenic agents. 3. Any organic or humoral damage caused by malarial infection favors the development and may aggravate the evolution of the tuberculous process.

Siglo Médico, Madrid

88: 457-484 (Nov. 7) 1931

Value of Sulphur Therapy. F. G. Deleito.—p. 457.
*Basal Metabolism in Dermatoses. L. Solla Casalderrey.—p. 462.
Local Anesthesia as Cause of Infection Following Extraction of Teeth. A. Góngora Durán.—p. 467.

Basal Metabolism in Dermatoses.—Solla Casalderrey made determinations of the basal metabolism in 300 patients with several forms of skin diseases (acne vulgaris, eczema, ichthyosis, pemphigus, alopecia, psoriasis, prurigo, pruritus, cutaneous tuberculosis and some other forms of dermatoses). The basal metabolism was altered in 56 per cent of the patients. The author concludes that the determination of the basal metabolism constitutes a useful coefficient both for the pathogenesis and for the treatment of dermatoses, especially in those cases in which endocrine derangements are the underlying causes of the metabolic disturbances, these in turn favoring the progress of the skin disease. The relation between the basal metabolism and dermatoses is still unknown. The alterations of the basal metabolism in patients with dermatoses have, however, such a great influence on the disease that if good results are expected from any treatment in dermatoses it may be first necessary to regulate, as much as possible, the basal metabolism by means of the proper treatment, which should aim especially to correct the underlying endocrine disturbances.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

123: 1-100 (Nov. 16) 1931

*Therapeutic Results of Inoculation Treatment in Dementia Paralytica. E. von Thurzó, Béla Balla and A. Koppándy.—p. 1.
*Ascending Polyneuroradiculitis (Landry's Syndrome). W. Gärtner. —p. 18.
Visceral Epileptic Aura: Cortical Localization of Thirst. A. B. Josephowitsch.—p. 43.
Secondary Degeneration of Splenium of Corpus Callosum. Rosenblath. —p. 54.
Statistics and Casuistics on Suicide in Hamburg. E. Brack.—p. 72.
Tumor of Corpus Callosum with Left Sided Astereognosis and Apraxia. F. Hoff.—p. 89.

Therapeutic Results of Inoculation Treatment in Dementia Paralytica.—Von Thurzó and his associates, in comparing the results of malariotherapy and of treatment with recurrent fever, find that malariotherapy gives the better results, in that the percentage of recoveries is greater and the fatalities are fewer than in treatment with recurrent fever. However, malariotherapy can be expected to be successful only in those cases in which the psychic symptoms have not existed for more than from one year to eighteen months. In emaciated patients, whose general condition is poor, the malaria treatment should be preceded by a strengthening cure. In patients with dementia paralytica, beyond the age of 50, malaria rarely has a therapeutic effect. Contraindications to malariotherapy and also to other inoculation treatments are cardiac insufficiency, even the less severe cases of myocarditis, also advanced arteriosclerosis, nephrosclerosis, advanced age, poor general condition, tuberculosis and other serious disorders. In dementia existing more than two years, malariotherapy is inadvisable because therapeutic effects can hardly be expected and the severe attacks of fever overtax the weakened organism. If malariotherapy is employed in the early stage of paralysis, it may be repeated after six months or after one year.

Ascending Polyneuroradiculitis (Landry's Syndrome).—Gärtner describes a case of Landry's syndrome, which, anatomically considered, belongs to the polyneuritic group, more especially to the disorders that involve primarily the spinal ganglions and the nerve roots. It spreads into the peripheral nerves, less into the sympathetic ganglions and not into the muscles. The vagus, trigeminus and facialis are primarily involved. Of the central nervous system, only the lumbar portion of the spinal cord is slightly involved, the other portions of the central nervous system and the meninges being free. The disease is degenerative and "inflammatory." It involves ectoderm and mesoderm, the first more in the sense of degeneration, the latter more in the sense of inflammation. Examination of all essential body organs revealed dilatation of the blood vessels and blood stasis. Besides this there were pancreas necrosis and acute leukocytic inflammation of the middle and the lower portions of the small intestine, with swelling of the mesenteric lymph nodes. In the latter, coccus-like microorganisms were discovered. In the spinal ganglions the same pathogenic organisms (or inclusion bodies?) were found. Since the literature on neuritis does not contain anything on the cultivation of coccus-like micro-organisms, it is assumed that these forms represent an accessory causal agent. The marked decrease of resistance (allergic reaction) is traced to a preceding carbon monoxide poisoning, and since the literature contains mention of relations between pancreatic necrosis and polyneuritis it is assumed that the pancreatic necrosis, which developed about three weeks before the patient died, also was of influence on the neuritic condition. The author explains the localization and the ascending of the paralytic condition by pointing out that all those parts of the nervous system became involved which are connected with the lymph channels of the digestive tract. There are connections between the small intestine, the mesenteric lymph nodes and the nerve sheaths of the roots of the spinal nerves; the vagus is related to the lymph vessels of the stomach, and the trigeminus and the facialis to those of the mouth and of the parotid gland. The earlier involvement of the more caudal portions of the nervous system is explained by the more severe (earlier?) involvement of the lower portions of the intestine. The author emphasizes that this case illustrates the significance of the examination of all organs, for examination of the nervous system alone would not have explained the case.

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Deutsches Archiv für klinische Medizin, Berlin

172: 1-112 (Oct. 31) 1931

Depressor Reflex of Carotid Sinus and Glyceryl Trinitrate Test. M. Mandelstamm and S. Lifschitz.—p. 1.
Dysoxidative Carbonuria in Diabetes Mellitus. L. Paolazzi.—p. 7.
*Blood Picture of Pernicious Anemia During Remission Produced by Liver Therapy. H. Schulten.—p. 28.
Spirocalculator, Slide Rule for Calculating Basal Metabolism. F. Nolte. —p. 56.
Eosinophilia and Nitrogen Metabolism in Subleukemic Myelosis. H. G. Krainick.—p. 70.
Gas Exchange and Glycolysis in Pleural Exudate. J. Herms.—p. 84.

Pernicious Anemia During Remission Produced by Liver Therapy.—In cases of pernicious anemia that were examined during the severest stage of the disease, Schulten always observed the various hematologic symptoms; namely, increased hemoglobin content of the individual cell (color index), increased diameter, increased anisocytosis, increased average volume and increased ovalness of the cells. Poikilocytosis and microcytosis were frequently but not always present. In the white blood picture there was leukopenia with relative lymphocytosis, eosinopenia, monocytopenia and hypersegmentation of the neutrophils; the platelets were considerably decreased. The bilirubin content of the serum was always increased, and frequently hematin was present. During the remission produced by liver therapy the increased values approached the normal values but generally remained near the upper limits of normality. After the remission had existed for several years, the diameter and the anisocytosis were increased. Not so regularly, the author observed (mentioned in the order of decreasing frequency) increased color index, increased average volume, hypersegmentation of the neutrophils, relative lymphocytosis, microcytosis and increased ovalness. However, during a good remission there was always absence of leukopenia, monocytopenia, eosinopenia, thrombocytopenia, hematinemia and pathologic bilirubinemia. The erythrocyte sedimentation speed was usually increased, even when the hemoglobin content was normal. The blood picture was in all cases of remission more or less pathologic, and it was so characteristic that even when the remission was complete the diagnosis could be made with considerable certainty.

Jahrbuch für Kinderheilkunde, Berlin

133: 257-380 (Nov.) 1931

*Nondiabetic Glycosuria and Hyperglycemia in Older Children. G. Fanconi.—p. 257.
Eructation and Vomiting. A. Peiper.—p. 301.
Brain Tumors in Children Simulating Acute Encephalitis. H. Knauer. —p. 307.
Postvaccinal Encephalitis in Children. V. Niederwieser.—p. 318.
Hemangioma Capillare Simplex. K. Ochsenius.—p. 326.
Hypoglycemia in Infants During Fasting Period. H. Schönfeld.—p. 331.
Studies on Coli Endotoxin. R. Goldschmidt.—p. 346.
Evaluation of Dysentery Agglutinins in Blood of Child. T. Kortmann. —p. 355.
Rôle of Hemato-Encephalic Barrier in Genesis of Neurotoxic Syndrome in Acute Nutritional Disorders: Distribution of Electrolytes in Blood and Spinal Fluid. S. J. Schaferstein.—p. 362.

Nondiabetic Glycosuria and Hyperglycemia in Older Children.—According to Fanconi there are two forms of renal glycosuria: (1) the primary familial form without other urinary changes and (2) the secondary nephrotic form. In discussing the primary familial form of renal glycosuria, he describes the clinical histories of two families and shows that the various subtypes, differentiated by some investigators, shade off into one another and are not separate disease entities. The author considers renal glycosuria not a disease but only a metabolic anomaly that does not require therapeutic intervention (at the most, avoidance of overfeeding). True diabetes did not develop in either of the two families, and the sugar content of the blood is either normal or subnormal. During a tolerance test the blood sugar curve increases less than in normal persons. The author describes only one case of the secondary nephrotic form of renal glycosuria. In a dystrophic girl, aged 1 year, there developed following a colicystopyelitis a nephrosis and later a normoglycemic glycosuria. This condition persisted during the entire period of eighteen months in which the child was under clinical observation, even when the child felt well again. Of the glycosurias and hyperglycemias that are due to nervous causes the author discusses the form that occurs in Feer's disease and in constitutional hyperthermia. The pathogenic factors of these forms include carbohydrate deficiency, incretory disorders and especially irritation of the central nervous system. In adiposogenital dystrophy (hypogenitalism) hypoglycemia exists, but in hypergenitalism (pubertas praecox) hyperglycemia is present. In hyperthyroidism the blood sugar is reduced, but it increases to hyperglycemic values when thyroid extracts are given. The author further reports the clinical history of a gracile boy with marked vasolability. Each infection is accompanied by glycosuria. The blood sugar is at times normal, at other times subnormal and sometimes increased. The boy also has a predisposition to ketosis, and administration of epinephrine at first does not produce hyperglycemia but produces an extreme glycosuria (up to 6 per cent). The cause of this marked glycolability is not known, but the author thinks that it is the result of an insufficiency of the nervous regulatory mechanism. Another disturbance of the carbohydrate metabolism that is probably due to insufficiency of the central regulatory function is the melituria in nurslings. In such infants, hyperglycemia and hyperglycorrhachia are often present. During carbohydrate abstinence the regulation of the blood sugar becomes impaired, perhaps as the result of insufficient production of insulin. The glycosuria of carbohydrate deficiency is of clinical significance in acetonemic vomiting. The author reports three cases of typical acetonemic vomiting in which administration of sugar was effective, but for several days it caused hyperglycemia and glycosuria. The glycolability during acetonemia explains many contradictions, for the blood sugar may be increased or reduced, and sometimes insulin therapy is contraindicated and sometimes it is advisable.

Klinische Wochenschrift, Berlin

10: 2153-2200 (Nov. 21) 1931

Prolegomena to Theory of Immunity. L. Hirszfeld.—p. 2153.
*Temporary Hemiplegia Caused by Nicotine. F. Külbs.—p. 2159.
*Early Diagnosis of Rheumatic Myocarditis and of Adhesive Pericarditis. M. Hochrein.—p. 2161.
Changes in Natural Immunity Produced by Peptone Shock in Dogs. R. Leuchtenberger.—p. 2163.
Organotherapy in Diseases of Liver and of Biliary Passages. H. E. Büttner.—p. 2165.
Experimentally Produced Hypersusceptibility of Human Skin to Homogenous Serum. E. Nathan and H. Grundmann.—p. 2169.
Hormone of Anterior Lobe of Hypophysis Influencing Thyroid. H. Paal. —p. 2172.
Pathology of Osteitis Deformans of Temporal Bone. H. Brunner. —p. 2174.
Influence of Oxygen and of Carbon Dioxide on Respiratory Tonus and Respiratory Excitability of Carotid Sinus. D. Danielopolu, I. Marcu and G. G. Proca.—p. 2176.
Potassium, Calcium, Chlorine and Water Contents of Lymph Nodes. F. Stern and P. Reinemer.—p. 2178.
Modification of Chronic Nephropathies by Intercurrent Infections. W. Jonas.—p. 2179.
Allergic Occupational Diseases of Skin. M. Michael.—p. 2180.

Temporary Hemiplegia Caused by Nicotine.—In four persons, namely, in three men between the ages of 21 and 38 and in one woman, aged 40, Külbs observed temporary paralytic manifestations. In the three men he noted hemiplegia and speech disturbances and in the woman motor aphasia. These disorders were in all instances preceded by impairment of the general condition, in that the mental and physical alertness was considerably reduced, or headache, paresthesia and dizziness existed. The objective signs of the abuse of tobacco were lymphocytosis, increased basal metabolism, nervousness and vasomotor irritability. Since abstinence from tobacco was soon followed by cure, the author assumes that the abuse of tobacco had caused vasoconstrictor disturbances, such as are noted in migraine. Acute overexertion, hereditary factors and syphilis could be excluded in all cases.

Early Diagnosis of Rheumatic Myocarditis and of Adhesive Pericarditis.—Hochrein asserts that rheumatic myocarditis and pericarditis are much more frequent during the early stages of polyarthritis than was formerly recognized. However, with the present-day methods they are detectable. In order to recognize the earliest signs of rheumatic myocarditis and of adhesive pericarditis, the author made continuous electrocardiographic and pneumotachographic tests on patients with acute, articular rheumatism. He selected the test results

of thirty-seven young persons who formerly were never seriously ill and who at the time of the first examination did not yet suffer from endocarditis. The electrocardiogram was entirely normal in only 15 per cent of these cases; in all other instances, abnormalities were present. Continuous tests revealed that after weeks and months these anomalies may disappear, and the author thinks it advisable that after recovery from articular rheumatism the patient should be kept under observation until the electrocardiogram is again completely normal. In the majority of patients with an abnormal electrocardiogram, endocarditis developed in the further course of the disease. The pneumotachographic tests revealed signs of pericardial adhesions in 10 per cent of the observed patients already at a time when there were as yet no other clinical signs or roentgenologic indications for that disorder. On the basis of these observations the author concludes that during articular rheumatism electrocardiographic and pneumotachographic tests should be made, even if there are no symptoms of circulatory disturbances, for only by such tests will it be possible to detect the myocardial and pericardial changes that frequently develop during the first days of the disease.

Zeitschrift für Kinderheilkunde, Berlin

51: 667-816 (Nov. 6) 1931

*Alimentary Fever: Nature of Action of Amidopyrine in Protein Fever. H. Finkelstein and R. Neumann.—p. 667.
Disturbances in Phosphate Metabolism in Rickets. W. Heymann. —p. 673.
Generalized Osteosclerosis Fragilis (Marble Bone Disease) with Periosteal New Growths. F. Windholz.—p. 708.
Meningoradicular Syndrome in Acute Anterior Poliomyelitis in Children. M. Jogichess.—p. 729.
Treatment of Whooping Cough. F. Grüneberg.—p. 741.
Amino-Acid Content of Blood of Umbilical Cord in Premature and in Full Term Infants. A. Lichtenstein.—p. 748.
*Dosage in Serotherapy of Malignant Pharyngeal Diphtheria. A. Lichtenstein.—p. 755.
Histopathologic Study of Brain of Dogs After Administration of Whooping Cough Endotoxin. Y. Yamaoka.—p. 778.
*Disturbances in Intermediate Carbohydrate Metabolism in Epidemic Parotitis. H. Mommsen and I. Mayer.—p. 786.
Protein Metabolism in Premature Infants. F. John.—p. 794.
Therapy of Chorea Minor with Cutivaccine. P. Freud.—p. 806.
Blood Pressure Curve in Chorea. P. Winkler.—p. 807.

Alimentary Fever: Nature of Action of Amidopyrine in Protein Fever.—Finkelstein and Neumann point out that in former reports they demonstrated that alimentary fever, particularly protein fever, is nothing else than one of the first symptoms of exsiccosis. The fever that develops following dehydration disappears as soon as water retention sets in again. In order to effect this, it is usually necessary to increase the water intake; however, there are also cases in which the dehydration resulted from an inadequacy of the regulatory mechanism, and in these the fever may disappear spontaneously, by reestablishment of the regulatory mechanism. In view of the latter observation the authors studied the processes that take place when defervescence is effected by administration of amidopyrine. They found that the reduction of the protein fever by amidopyrine is due to a sufficient water retention. This water retention is the primary factor and only by this is the further formation of fever-producing substances prevented and defervescence made possible. It is probable that the action of amidopyrine on the water exchange is a central nervous action.

Dosage in Serotherapy of Malignant Pharyngeal Diphtheria.—Lichtenstein's evaluation of the efficacy of large and of small doses of diphtheria serum is based on a material of 1,860 cases of uncomplicated, malignant, pharyngeal diphtheria, in which the patients received treatment in a Stockholm hospital during the thirty year period from 1900 to 1929. His object is not to discuss the serotherapy of diphtheria in general but only to determine whether the large doses which have been given in recent years have reduced the lethality in comparison with the smaller doses of earlier years. He found that the increase of the immunity units from 5,000 to 10,000 in the earlier years, up to from 100,000 to 200,000 in recent years, has not effected any decrease in the mortality rate, either when the entire material is considered or when it is divided into groups according to severity, time of administration and age of the patient. The incidence of paresis of the mild as well as of the severe forms, and perhaps also the frequency of myocarditis have increased in spite of the larger doses. The incidence of late toxic albuminuria, however, has somewhat decreased.

Disturbances in Intermediate Carbohydrate Metabolism in Epidemic Parotitis.—After reviewing the literature, Mommsen and Mayer describe their own investigations. They studied the blood sugar curves on several children with epidemic parotitis. The tolerance tests were made by means of oral administration of sugar and were repeated several times, after intervals of several days. In severe cases of mumps the blood sugar curve that was made on the fifth or sixth day showed the signs of a diabetic curve. From this the authors conclude that during this time the incretory functions of the pancreas become impaired by the infection of the parotid gland. They then discuss the relations between epidemic parotitis and pancreatitis and stress that careful examination with special methods may reveal disorders that are below the threshold of simple clinical observation. They express the hope that such investigations will reveal the significance of epidemic parotitis in the pathogenesis of diabetes. In regard to the therapy, they state that in diabetic patients, and in children from diabetic families, epidemic parotitis should be considered as a serious infectious disease, which, contrary to the usual procedure, should receive active treatment. Since the most recent etiologic investigations indicate that a spirochete is the cause of mumps, it is suggested that arsphenamine could be tried.

Zeitschrift für klinische Medizin, Berlin

118: 193-506 (Nov. 6) 1931

Effect of Epinephrine on Lactic Acid in Blood. J. Friesz and E. Mohos. —p. 193.
Quantity of Blood and Erythrocytosis in Acidosis. S. Horwitz.—p. 198.
Metabolism in Addison's Disease: Disturbances of Carbohydrate Metabolism. A. Buresch.—p. 206.
Hemolytic Substances in Blood with Special Consideration of Pernicious Anemia. H. Ucko.—p. 221.
*Heredity: Its Significance for Normal Gastric Function. H. Glatzel. —p. 242.
Vegetative Heart Reflexes and Auricular Fibrillation. M. Mandelstamm. —p. 261.
Microdetermination of Residual Nitrogen in Blood. L. N. Lapin and W. E. Kill.—p. 278.
Liver Therapy of Chronic Hemolytic Icterus. V. Jedlička and Š. Váradi.—p. 286.
Recurrent Dangerous Uterine Hemorrhages in Essential Thrombopenia After Splenectomy. H. Kretzschmar.—p. 297.
Pleural Exudates in Cardiac Decompensation. F. Reiche.—p. 307.
*Importance of Roentgen Picture for Prognosis of Influenzal Bronchopneumonia. K. Eimer and E. Kestermann.—p. 323.
Significance of Certain Points Painful to Pressure in Diagnosis of Visceral Diseases. N. Onodera.—p. 337.
*Gastrographic Method for Diagnosis of Gastric Cancer, Gastroduodenal Ulcer and Cholecystitis. N. Onodera, S. Kanegae, M. Matufuzi and T. Hasi.—p. 354.
Paroxysmal Hemoglobinuria and Hematinuria. K. Lang and A. Braun. —p. 374.
Disturbances of Hepatic Function in Diseases of Midbrain. W. Siedhoff.—p. 383.
Pernicious Anemia Refractory to Liver Therapy. F. Schlumm.—p. 396.
Significance of Granular Changes in Finely Granulated Leukocytes. E. Spaeth.—p. 406.
Hepatic Icterus. H. Brugsch.—p. 435.
Biochemical Components of Blood During Surgical Treatment of Exophthalmic Goiter. M. R. Weber.—p. 464.
Metabolism During Work in Obesity. B. Kommerell.—p. 474.
Significance of Causative Factor and of Reactive Organ in Pernicious Anemia. E. Risak.—p. 485.

Heredity: Its Significance for Normal Gastric Function.—In the introduction to his article, Glatzel reviews the literature on hereditary factors in the pathogenesis of gastric diseases, showing that the majority of investigators consider an hereditary predisposition probable. Because he considers studies on twins as the most reliable method for solving hereditary problems, he tested the gastric function of twelve uniovular sets of twins and of twelve binovular sets of twins. He employed the fractional withdrawal following the alcohol test drink. On the basis of his tests he reaches the following conclusions: In healthy persons and under physiologic conditions a considerable influence of hereditary factors is proved by the color of the secretion of the empty stomach, by the height of the maximum of the acidity following the intake of the stimulating test drink, by the type of the acidity curve and by the quantity regurgitated from the duodenum. Whether the time when acidity reaches its maximum following intake of the stimulant, and whether the reaction of the gastric secretion

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following introduction of the catheter are largely idiotypically determined is not absolutely sure but probable. Contrary to this, there is no noteworthy participation of idiotypic factors in the phenotypic development of the quantity and acidity of the gastric secretion obtained during the first and the second fractional withdrawal, the difference between "free hydrochloric acid" and "total acidity," the time of the elimination of the test drink, and the quantity of the after-secretion. The author thinks that the factors determining the height and the timely course of the acid secretion are primarily hereditary. On the other hand, the factors that influence the nonacid constituents of the gastric juice (mucus) are primarily determined by environmental conditions.

Roentgen Picture in Prognosis of Influenzal Bronchopneumonia.—Among the twenty-eight cases of pulmonary complications which Eimer and Kestermann observed during the influenza epidemic of 1930-1931, they noted an unusually severe form in which the roentgenogram shows miliary bronchopneumonic infiltration of large portions of the lungs or of the entire lungs. In the cases with such roentgenograms the mortality rate was relatively high. For this reason the authors consider such roentgenograms not only of great prognostic value but also significant in the determination of the therapeutic procedure for these pulmonary complications. In the other cases the influenzal bronchopneumonia took a comparatively short and favorable course.

Gastrographic Method for Diagnosis of Gastric Cancer, Gastroduodenal Ulcer and Cholecystitis.—Onodera and his associates describe a gastrographic method by which the so-called hunger contractions of the stomach are registered. A rubber balloon is introduced into the stomach and inflated, and in this manner it is possible to register the gastric contractions on smoked paper. The observation time is from one to four hours. The method is simple, inexpensive, and not at all unpleasant for the patient. The authors made about 1,600 gastrograms on more than 1,000 persons, some of whom were healthy and some of whom had gastric or other disorders. In patients with cancer of the stomach they noted a type of curve not at all like that which is characteristic for normal persons, and they also detected characteristic curves for gastric ulcers and for disorders of the biliary tract. They employed this method of gastrography also on animals in which the various pathologic conditions of the stomach and of the biliary tract had been produced experimentally. The types of curves observed in these animals showed a close resemblance to those in human beings.

Zeitschrift für Krebsforschung, Berlin

34: 419-544 (Oct. 17) 1931

Studies on Thyroidal Activity of Mice in Course of Development of Tar Cancer and on Growth of Inoculation Cancer in Tadpole Experiment. L. T. Larionow.—p. 419.
*Transplantation of Carcinoma (Ehrlich's Culture) into Regenerating Nerve Trunk of White Mice. L. T. Larionow and M. N. Meissel.—p. 429.
Microkinematographic Studies on Tissue Cultures: Microsurgery on Cells from Sarcoma Cultures. E. A. Hauser and Hildegard Vollmar.—p. 441.
Attempts at Early Diagnosis of Cancer from Blood According to Capillary Dynamic Method. W. Kaelin.—p. 457.
*Changes in Lipoid Metabolism Following Treatment with Cancer-Forming Substances. Elisa Morelli and M. Focosi.—p. 473.
So-Called Primary Hemangio-Endothelioma of Liver. L. Puhr.—p. 503.
"Mitogenetic" Induction of Cells of Warm-Blooded Animals. A. Lasnitzki and E. Klee-Rawidowicz.—p. 518.
*Experimental Therapy of Tumors: Influence of Various Heavy Metal Compounds on Experimental Cancer of Mice. W. A. Collier and F. Krauss.—p. 526.
Comparative Statistical Observations on Cancer of Stomach. W. Cramer.—p. 531.

Transplantation of Carcinoma (Ehrlich's Culture) into Regenerative Nerve Trunk of White Mice.—Larionow and Meissel found that when mouse carcinoma (Ehrlich's culture) is implanted between the ends of the divided sciatic nerve, and the nerve grows into the tumor, a contact develops between the newly formed nerve fibers and the tumor elements, and the tumors thus formed are larger than the controls. This phenomenon seems to be due to the contact that is established and not to the division as such. It is possible that under these conditions there develops a certain relationship between the nervous system and the tumor, which, among other manifestations, is also indicated by the more rapid growth of the tumor elements.

Lipoid Metabolism Following Treatment with Cancer-Forming Substances.—In the introduction, Morelli and Focosi point out that on the basis of the observations of various investigators it can be stated that cholesterol accelerates neoplastic development, that neoplastic tissues have a special affinity for cholesterol and that patients with cancer or persons predisposed to cancer have hypercholesteremia. In their own studies on the influence of a modified lipoid metabolism on tumors, they adhered to the following program: 1. They studied only tumors that are produced experimentally by certain substances (tar) and not those produced by inoculation. 2. They investigated the action exerted by poisons of known composition and lipolytic action on substances producing cancer. In a first series of treatments white mice were given a sublethal dose of a lipolytic substance, namely, snake venom, and then they were subjected to tar applications. On the basis of observations during this and several other experiments, the authors reach the following conclusions: 1. Some cancer-forming substances cause generalized organic changes that are characterized by destruction of the lymphatic apparatus, by proliferation of the histolytic elements of the reticulo-endothelial system and by alteration of the lipoid complexes in the liver and spleen. The formation of toxic substances is probable. 2. Substances that hasten the development of tumors also accelerate those organic changes. 3. In young animals and in those refractory to tumor formation this influence may cause malignant proliferation of the histocytic elements of the reticulo-endothelial system and finally may form a real leukemia tissue. The authors conclude that their investigations corroborate that the lipoids of the lymphatic apparatus and of the reticulohistocytic system are of greatest significance for the formation of neoplasms.

Influence of Heavy Metal Compounds on Cancer of Mice.—Collier and Krauss tested the action of inorganic metal compounds on experimental carcinoma of mice. Ten copper compounds, eleven iron compounds, thirteen cobalt compounds and six rhodium compounds were without effect. Of seven osmium compounds, three chromium compounds, four ruthenium compounds and nine manganese compounds, several were more or less effective. Of the ten lead compounds, four proved effective; namely, lead tetroxide and three compounds containing potassium and chlorine. The action of the heavy metal on the experimental cancer of mice is determined not alone by the metal but also by the structure of the compounds and by the elements with which the metal is combined.

Zeitschrift für Urologie, Leipzig

25: 801-880, 1931

Technic of Cystography. J. Simon and J. Bedrna.—p. 801.
*Clinical Significance and Histologic Structure of Urachus Cysts. C. Bauer.—p. 807.
Value of Pyelography for Diagnosis of Renal Tuberculosis. T. Hryntschak.—p. 819.
Perineal Extramuscular Prostatectomy on Basis of Five Years' Experience. E. Haim.—p. 842.

Urachus Cysts.—Bauer follows a review of the literature with a general discussion of urachus cysts. He classifies them into three types: the para-umbilical, the intermediary and the paravesical. He then reports the clinical history of a woman, aged 47, with a paravesical urachus cyst. In this instance total extirpation of the cyst and excision of the vertex of the bladder resulted in cure. Especial attention is given to the diagnosis, differential diagnosis and histologic examinations. The diagnosis is facilitated if, in addition to the clinical diagnosis, roentgenoscopy and cystoscopy are resorted to. The latter reveals changes at the vertex of the bladder that are pathognomonic for a urachus cyst. In the reported case, cystoscopy was dispensed with because an immediate surgical intervention was necessary. The cyst was as large as a child's head. On the internal surface the same "papillomas" were found that had been described by another investigator. Histochemical examination revealed that these papillomas contained cholesterol. An unusual aspect, which the author did not find mentioned in other reports, was the presence of a diverticulum, the size of a walnut, on the wall of the cyst. The author also discusses the contents of the cyst and shows several photomicrographs of the cellular elements. Since, during the embryonal stage, the urachus is con-

nected with the hindgut, it is not surprising if intestinal epithelium (cylindric epithelium) is found in the region of the vertex of the bladder. It is here also that the adenoma and the adenocarcinoma of the urachus originate. A section from the vertex of the bladder reveals the histologic conditions in this region. The author agrees with the theory of inflammatory pathogenesis of the urachus cysts.

Zentralblatt für Gynäkologie, Leipzig

55: 3425-3488 (Nov. 28) 1931

*Anatomy of Chronic Gonorrhea of Cervix Uteri. R. Schröder.—p. 3429.
Temporary Face Position and Face Position in Pelvic Presentation. A. Mayer.—p. 3438.
Treatment of Hemorrhages in Women with Infantilism or Hypoplasia of Genitalia. H. Roessler.—p. 3443.
*Bilateral Ligation of Hypogastric Artery in Operable and in Inoperable Carcinoma of Uterus. H. Harttung.—p. 3449.
Indications for Interruption of Pregnancy in Hyperemesis Gravidarum. S. Böhm.—p. 3454.
Intra-Uterine Spontaneous Amputation of Leg and Complicated Spontaneous Fracture of Other Leg. J. Granzow.—p. 3458.
Intra-Uterine Development of Pressure Necroses on Both Arms of the New-Born. N. A. Pantschenko.—p. 3462.
Manual Removal of Placenta and Inspection of Uterus. T. Johannsen. —p. 3463.

Anatomy of Chronic Gonorrhea of Cervix Uteri.—Schröder's description of the pathologic anatomy of gonorrhea of the cervix is based on his observations on twenty patients. In ten of them, gonococci were still present, and in the other ten they had been present before. The author also compares the morbid anatomy of cervical gonorrhea with nongonorrheal inflammations of the cervix. Severe gonorrhea of the cervix is characterized by periglandular infiltrates of round and plasma cells. These infiltrates reach deep into the glands. Around the fundus of the glands there frequently are small abscesses. The glandular epithelium is frequently replaced by stratified pavement epithelium. In the deeper lying periglandular abscesses, gonococci are demonstrable.

Bilateral Ligation of Hypogastric Artery in Operable and in Inoperable Cancer of Uterus.—Before reporting his experiences with bilateral ligation of the hypogastric artery, Harttung shows that such an intervention is possible without interfering with the blood supply of the organs of the small pelvis, and that functional disturbances of these organs do not have to be feared. He employed bilateral ligation in operable carcinoma of the uterus, in inoperable cases and in patients in whom relapses occurred following radiation therapy. In discussing the technic he describes the extraperitoneal and the transperitoneal methods. About the value of the ligation for a permanent cure he is as yet unable to make definite statements, since his earliest application of this method dates back less than four years.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

75: 5785-5856 (Nov. 28) 1931

Changes in Limbs Associated with Internal Diseases. C. L. de Jongh. —p. 5786.
*Albers-Schoenberg Marble Bones (Osteopetrosis). E. S. Frank.—p. 5794.
Choice of Size of Focus and Focal Distance in Making Roentgenograms of Lungs. A. Daan.—p. 5804.
"A a l/r a," a Common Cause of a Prolonged Delivery. N. J. A. F. Boerma.—p. 5813.
Appendicocecal Invagination. E. A. Immink.—p. 5817.

Albers-Schoenberg Marble Bones (Osteopetrosis).—Frank describes three cases of Albers-Schoenberg marble bones (osteopetrosis) occurring in three children of one family, born successively. The parents did not show any traces of the disease. The children born since these three children are healthy. Two of the three patients died. On the third child, splenectomy was performed. The clinical picture in the first two children was characterized by changes in the blood and in the hematopoietic organs. In the third child, besides the bone symptoms typical of this disease there were observed a thickening of the periosteum of the long bones and the ribs, loosening of the teeth without any perceptible disorder of the jaws, and an increased fragility of the blood. A differential diagnosis was established as against congenital hemolytic anemia. Objections were raised to the conception of Péhu that the primary disease was a disorder of the parathyroids and that a partial parathyroidectomy was indicated.

Norsk Magasin for Lægevidenskapen, Oslo

92: 933-1044 (Sept.) 1931

*Hallux Valgus and Other Diseases of Toe (Hallux Rigidus and Köhler's Disease). J. K. Hald.—p. 933.
*Case of Incarcerated Treitz's Hernia. N. H. Brodersen.—p. 952.
*Laurence-Moon-Biedl's Syndrome (Complicated Dystrophic Imbecility) Observed in Brother and Sister. R. Bing.—p. 956.
*Isolated Traumatic Rupture of Symphysis and Treatment. R. Grønn. —p. 966.
*Surgical Reposition of Cervical Luxation. A. J. A. Arnesen.—p. 983.
*Hip-Joint Disease with Calvé-Legg-Perthes' Pathogenesis, Illustrated by Single Case. K. Nicolaysen.—p. 985.

Hallux Valgus and Other Diseases of Toe.—Hald reviews the symptoms, causes and treatment of hallux valgus. Of seventy-three patients treated, he examined forty-one later. Schede's or Reverdin's operation was done previous to 1920, from 1920 to 1926, mainly Hueter's or Mayo's, since then, Hofmann's. The last-named is recommended as the most physiologic, but the treatment requires a long time. Four cases of hallux rigidus and three of Köhler's disease examined after treatment are also reported.

Case of Incarcerated Treitz's Hernia.—In Brodersen's instance of incarcerated hernia through the duodenojejunal recess, about 1.5 meters of the small intestine was gangrenous and therefore resected. The opening of the hernial sac was closed with four silk sutures. Recovery was uneventful. A little more than a month after the operation, attacks of intestinal occlusion set in which were found to be due to a horseshoe-shaped loop of the small intestine, caused by adhesions. Removal of the adhesions and reestablishment of the intestinal passage were followed by recovery.

Laurence-Moon-Biedl's Syndrome in Brother and Sister.—Bing states that only thirty-six cases of this syndrome have been reported in the literature to date. The main symptoms are imbecility, adiposogenital dystrophy, atrophy of the optic nerve or retinitis pigmentosa, and polydactylism. He presents two additional cases, in a boy aged 17 and a sister aged 14. The parents and the four other children are normal. Treatment with calcium, thyroid and pituitary extract, while without effect on the vision, resulted in loss of weight, rise in basal metabolism, and a change from dulness and apathy to greater animation and interest in the surroundings.

Isolated Traumatic Rupture of Symphysis.—Grønn has found in the literature only twenty-five cases of rupture of the symphysis pubis due to trauma. He believes that the two additional cases he reports, one personal, are the first in the Norwegian literature. In his instance a combination of suture of the bones and compression treatment gave excellent results. The etiology, symptomatology, diagnosis, prognosis and treatment of the condition are reviewed.

Surgical Reposition of Cervical Luxation.—This operation, guided by sight, was performed by Arnesen in a case of total luxation of the fifth cervical vertebra. The fatal outcome, which he feels occurred in spite of the treatment, is ascribed to injury of the spinal cord. From his observations in this case he concludes that, in bilateral cervical luxation, surgical reposition without preceding attempted bloodless reposition should always be done as the only rational treatment and is, in comparison to the grave injury, relatively safe and easily carried out.

Hip Joint Disease with Calvé-Legg-Perthes' Pathogenesis.—In the case described by Nicolaysen in a boy aged between 11 and 12, the first symptoms of the typical osteochondritis deformans juvenilis set in a year after traumatic luxation of the hip with reposition eighteen or twenty hours after the injury. He sees a definite causal relation between the luxation and the succeeding condition because (1) roentgen examination of the patient's femur at the time of the dislocation showed a wholly normal picture in the boy, who was then 10 years of age, and (2) the disorder appeared at a stage in bone development when Calvé-Legg-Perthes' disease is uncommon. He says that this case and Rehbein's similar case, together with the results of the experiments of Nuszbaum and Müller, indicate that not the trauma as such but a disturbance in nutrition due to the luxation is the cause of the disease in these cases. This agrees with Axhausen's theory of its pathogenesis, although the nature of the change in the blood vessels is unknown.